

HOLDEN (E. S.)

WASHINGTON ASTRONOMICAL OBSERVATIONS FOR 1876.—APPENDIX I.

A SUBJECT-INDEX

TO

THE PUBLICATIONS

OF THE

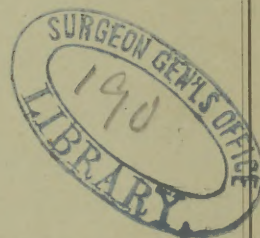
UNITED STATES NAVAL OBSERVATORY,

1845—1875.

BY

✓
EDWARD S. HOLDEN,

PROFESSOR OF MATHEMATICS, UNITED STATES NAVY.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1879.

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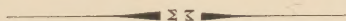
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A SUBJECT-INDEX

TO THE

PUBLICATIONS OF THE UNITED STATES NAVAL OBSERVATORY (1845-1875):
INCLUDING THE OBSERVATIONS OF CAPT. J. M. GILLISS, U. S. N.,
ON CAPITOL HILL (1838-1842).

BY

EDWARD S. HOLDEN.

I.

INTRODUCTION.

The United States Naval Observatory published its first annual volume in 1845, and since 1861 it has yearly issued a volume of observations, results, and discussions, so that Volume XXII was published in 1875.

These volumes have on the average about 500 pages, and contain the official reports of the Superintendent to the Bureau of Navigation of the Navy Department; the annual introductions to the observations with each instrument (usually prepared by the officer in charge of the particular instrument); the detailed observations with each instrument, and their reductions; the results of such observations; and finally one or more appendixes which are special discussions of points in practical or theoretical astronomy.

It has seemed to me desirable that the valuable observations and discussions contained in these volumes should be made more accessible, and in 1876 I began, for my own use, the preparation of an index to these publications. As it gradually grew in size I became more sensible of the immense saving of time which would result if similar indexes were extant for the published observations of other observatories, and in 1878 I published a plan for the making of such an index.*

I here renew the recommendations of that paper, *viz.*, that such indexes be prepared and united in one general work. This would require the indexing of not more than 400 volumes, and by co-operation, the labor necessary would not be excessive compared with the extreme value of the completed work.

The present index may be taken as a contribution toward this general plan. I learn that the Royal Observatory, Greenwich, is preparing an index to its publications which will shortly be printed. Thus two of the longer series are already provided for.

*A Subject-Index for the Publications of Observatories: The Library-Journal, Vol. III, No. 10, p. 365. New York. 1878.

With regard to the arrangement of the present work little need be said. I am fully aware of its defects and of some lacks, real and apparent, in its logical form. In general, however, I believe it will fulfill its object.

It should be remembered that from 1842 to 1866 the Hydrographic Office was under the same superintendence as the Naval Observatory, though its publications were separately issued. As the present index relates strictly to the series known as the Washington Astronomical and Meteorological Observations, it contains no references to the important series of Wind and Current Charts, Sailing Directions, etc., prepared by Lieut. M. F. MAURY, as head of the Hydrographical Office, which have proved so useful to navigators, and the principles of which have been so generally adopted by mercantile nations, nor to special reports prepared at the Observatory by Admiral C. H. DAVIS, Prof. J. E. NOURSE, Lieut. W. F. LYNCH, and others, on Inter-oceanic Canals, North Polar Expeditions, Surveys in Palestine, etc.

I have to express my obligations to Miss Lockwood, who has faithfully and intelligently performed a large part of the clerical work, and to Lieut. T. DIX BOLLES, U. S. N., who has prepared the list of officers at the Observatory and aided throughout the latter portions of the work.

I add below a list of the officers of the Observatory arranged under the instruments on which they worked. This may facilitate a reference to the subject-index. A more detailed author-index does not seem to me necessary, as I have included the names of authors in the general alphabet.

II.

SUPERINTENDENTS OF THE OBSERVATORY.

Commander M. F. MAURY, from October 1, 1844, to April 20, 1861.
 Captain J. M. GILLISS, from April 22, 1861, to February 9, 1865.
 Rear-Admiral C. H. DAVIS, from April 28, 1865, to May 8, 1867.
 Rear-Admiral B. F. SANDS, from May 8, 1867, to February 23, 1874.
 Rear-Admiral C. H. DAVIS, from February 23, 1874, to February 18, 1877.
 Rear-Admiral JOHN RODGERS, from May 1, 1877, to ———

OFFICERS ATTACHED TO THE VARIOUS INSTRUMENTS SINCE 1845.

1845.

West Transit: Lieutenants MAYNARD, ALMY; Professors HUBBARD, KEITH.
Prime Vertical: Lieutenants MAURY, HERNDON; Passed Midshipman WORDEN.
Mural Circle: Lieutenants MAURY, PAGE; Professor COFFIN.
Meridian Circle: Lieutenants PORTER, MAYNARD.

1846.

West Transit: Lieutenant ALMY, Professor KEITH.
Mural Circle: Lieutenant PAGE, Professor COFFIN.
Meridian Circle: Lieutenants PORTER and MAYNARD, Professor HUBBARD.
Prime Vertical: Lieutenants MAURY and HERNDON, Passed Midshipman WORDEN.
Equatorial: Lieutenant MAURY, Professor WALKER.

1847.

West Transit: Professors BEECHER and KEITH.
Mural Circle: Lieutenants PAGE and STEEDMAN, Professor COFFIN.
Meridian Circle: Lieutenants MAYNARD and MUSE, Professors HUBBARD and MAJOR.
Prime Vertical: Lieutenant HERNDON, Professor PETTIGREW.
Equatorial: Lieutenant MAURY, Professor HUBBARD.

1848.

West Transit: Professors BEECHER and KEITH.
Mural Circle: Lieutenant STEEDMAN, Professor COFFIN.
Meridian Circle: Lieutenant MUSE, Professor MAJOR.
Prime Vertical: Professor HUBBARD.
Equatorial: Assistant Astronomer FERGUSON.

1849.

West Transit: Professors BEECHER and KEITH.
Mural Circle: Lieutenant STEEDMAN, Professor COFFIN.
Meridian Circle: Professor MAJOR.
Prime Vertical: Lieutenant WORDEN, Professor HUBBARD.
Equatorial: Assistant Astronomer FERGUSON.

1850.

West Transit: Professors BEECHER and KEITH.
Mural Circle: Professor BENEDICT.
Meridian Circle: Professor MAJOR.
Prime Vertical: Lieutenant WORDEN, Professor HUBBARD.
Equatorial: Assistant Astronomer FERGUSON.

1851.

West Transit: Professors BEECHER, KEITH, and LAWRENCE.
Mural Circle: Professors YARNALL, BENEDICT, and FERGUSON.
Meridian Circle: Professor MAJOR (J.) and Mr. MAJOR (D. G.).
Equatorial: Assistant Astronomer FERGUSON.

1852.

West Transit: Professors KEITH and LAWRENCE.
Mural Circle: Professors YARNALL, BENEDICT, and Assistant Astronomer FERGUSON.
Meridian Circle: Professor MAJOR and Mr. MAJOR.
Equatorial: Assistant Astronomer FERGUSON.

1853-54-55-56-57-58-59-60.

Mural and Transit: Professor YARNALL.
Equatorial: Assistant Astronomer FERGUSON.

1861.

Transit Instrument: YARNALL, ROBINSON, NEWCOMB.
Mural Circle: LAWRENCE, HUBBARD, HESSE.

1862.

Meridian Circle: YARNALL, NEWCOMB.
Mural Circle: HUBBARD, HESSE, HARKNESS.
9.6-inch Equatorial: FERGUSON, HALL.

1863.

Transit Instrument: YARNALL, NEWCOMB, ROGERS.
Mural Circle: HUBBARD, HESSE, NEWCOMB, HARKNESS, ROGERS.
Prime Vertical Transit: HUBBARD, NEWCOMB, HARKNESS.
9.6-inch Equatorial: FERGUSON, HALL.

1864.

Transit Instrument: YARNALL, ROGERS.
Prime Vertical Transit: NEWCOMB, HARKNESS.
Mural Circle: NEWCOMB, HALL, HARKNESS, DOOLITTLE.
9.6-inch Equatorial: FERGUSON, HALL.

1865.

Transit Instrument: YARNALL, EASTMAN, THIRION.*Prime Vertical Transit*: NEWCOMB, HALL, HARKNESS.*Mural Circle*: NEWCOMB, HALL, HARKNESS, ROGERS, DOOLITTLE.*9.6-inch Equatorial*: FERGUSON, HALL.

1866.

Prime Vertical Transit: NEWCOMB, HALL.*Mural Circle*: YARNALL, DOOLITTLE.*Transit Circle*: NEWCOMB, HALL, ROGERS, THIRION.*9.6-inch Equatorial*: FERGUSON, HALL, EASTMAN.

1867.

Prime Vertical Transit: NEWCOMB, HALL, ABBE.*Mural Circle*: YARNALL, DOOLITTLE.*Transit Circle*: NEWCOMB, HALL, ROGERS, THIRION.*9.6-inch Equatorial*: FERGUSON, NEWCOMB, HARKNESS, EASTMAN.

1868.

Transit Instrument: YARNALL.*Mural Circle*: YARNALL, DOOLITTLE.*Transit Circle*: NEWCOMB, HALL, HARKNESS, EASTMAN, ABEE, THIRION, FRISBY.*9.6-inch Equatorial*: HALL.

1869.

Transit Instrument: } YARNALL, EASTMAN, FRISBY, DOOLITTLE, BARDWELL.*Mural Circle*:*Transit Circle*: NEWCOMB, HALL, HARKNESS, THIRION, FRISBY.*9.6-inch Equatorial*: HALL.

1870.

Transit Instrument: YARNALL, FRISBY, STONE.*Mural Circle*: YARNALL, FRISBY, BARDWELL.*Transit Circle*: HARKNESS, EASTMAN, FRISBY, STONE.*9.6-inch Equatorial*: HALL, NEWCOMB.

1871.

Transit Instrument: YARNALL, EASTMAN, FRISBY, SKINNER, STONE.*Mural Circle*: YARNALL, FRISBY.*Transit Circle*: HARKNESS, HALL, EASTMAN, FRISBY, STONE.*9.6-inch Equatorial*: HALL, SKINNER.

1872.

Mural Circle: YARNALL.*Transit Circle*: HARKNESS, HALL, EASTMAN, FRISBY, STONE.*9.6-inch Equatorial*: HALL.

1873.

Transit Instrument: YARNALL.*Mural Circle*: YARNALL, SKINNER.*Transit Circle*: HARKNESS, EASTMAN, HOLDEN, FRISBY, STONE, SKINNER.*9.6-inch Equatorial*: HALL, SKINNER.*26-inch Equatorial*: NEWCOMB, HOLDEN.

1874.

Mural Circle: YARNALL.*Transit Circle*: HARKNESS, EASTMAN, FRISBY, STONE, SKINNER.*26-inch Equatorial*: NEWCOMB, HOLDEN.

1875.

Transit Instrument: } YARNALL.*Mural Circle*:*Transit Circle*: EASTMAN, FRISBY, SKINNER, STONE, PAUL.*9.6-inch Equatorial*: EASTMAN.*26-inch Equatorial*: NEWCOMB, HALL, HOLDEN.

The works indexed are named below. Those distinguished by a star * are not included in the regular annual publications of the Observatory :

Gilliss, J. M. :

*Astronomical Observations made at the Naval Observatory, Washington, under orders of the Honorable Secretary of the Navy, dated August 13, 1838, by Lieutenant J. M. GILLISS, U. S. N. [Observations on Capitol Hill and not at the National, afterwards Naval Observatory.] Washington, Gales & Seaton, printers, 1846. 8vo.

NOTE.—This is referred to as GILLISS, 1838.

Washington, 1845, Vol. I :

Astronomical Observations made under the direction of M. F. MAURY, Lieut. U. S. Navy, during the year 1845 at the U. S. Naval Observatory, Washington. Vol. I. Published by authority of the Secretary of the Navy. Washington, J. & G. S. Gideon, printers, 1846. 4°.

*Zones of Stars observed at the National Observatory, vol. i, part i, containing the zones observed with the Meridian Circle in 1846. Washington, 1860. 4°.

Washington, 1846, Vol. II :

Astronomical Observations made under the direction of M. F. MAURY, Lieut. U. S. Navy, during the year 1846 at the National Observatory, Washington. Vol. II. Published by authority of the Secretary of the Navy. Washington, C. Alexander, printer, 1851. 4°.

Washington, 1847, Vol. III :

Astronomical Observations made under the direction of M. F. MAURY, Lieut. U. S. Navy, during the year 1847, at the National Observatory, Washington. Vol. III. Published by authority of the Secretary of the Navy. Washington, C. Alexander, printer, 1853. 4°.

Washington, 1848, Vol. IV :

Astronomical Observations made under the direction of M. F. MAURY, Lieut. U. S. Navy, during the year 1848 at the U. S. N. Observatory, Washington. Vol. IV. Published by authority of the Secretary of the Navy. Washington, A. O. P. Nicholson, Public Printer, 1856. 4°.

Washington, 1849-50, Vol. V :

Astronomical Observations made during the years 1849 and 1850 at the U. S. Naval Observatory, Washington, approved by Capt. D. N. INGRAHAM, Chief of the Bureau of Ordnance and Hydrography, and published by authority of the Hon. ISAAC TOUCEY, Secretary of the Navy, by M. F. MAURY, LL. D., U. S. N., Superintendent of U. S. Observatory and Hydrographical Office, Washington. Volume V. Washington, Cornelius Wendell, printer, 1859. 4°.

Washington, 1851-52, Vol. VI :

Astronomical Observations made at the U. S. Naval Observatory during the years 1851 and 1852. Published by authority from the Hon. Secretary of the Navy. Prepared for publication under direction of Capt. J. M. GILLISS, U. S. N., Superintendent. Washington, 1867. 4°.

Washington, 1853-60, Vol. VII :

Results of Observations made at the United States Naval Observatory with the Transit Instrument and Mural Circle in the years 1853 to 1860, inclusive. By Prof. M. YARNALL, Prof. JAMES MAJOR, Prof. T. J. ROBINSON. Prepared by Prof. M. YARNALL by order of Rear-Admiral B. F. SANDS, U. S. N., Superintendent U. S. Naval Observatory. Published by authority of the Hon. Secretary of the Navy. Washington, Government Printing Office, 1872. 4°. (Washington Observations for

APP. I—2

Washington, 1853-60, Vol. VII—Continued.

1871. Appendix II.) [Also called the volume for 1853-60, since it contains the results of work done in those years.]

Washington, 1861, Vol. VIII :

Astronomical and Meteorological Observations made at the United States Naval Observatory during the year 1861. Published by authority from the Hon. Secretary of the Navy. Commander J. M. GILLISS, U. S. N., Superintendent. Washington, Government Printing Office, 1862. 4°.

Washington, 1862, Vol. IX :

Astronomical and Meteorological Observations made at the United States Naval Observatory during the year 1862. Published by authority from the Hon. Secretary of the Navy. Capt. J. M. GILLISS, U. S. N., Superintendent. Washington, Government Printing Office, 1863. 4°.

Washington, 1863, Vol. X :

Astronomical and Meteorological Observations, made at the United States Naval Observatory during the year 1863. Published by authority from the Hon. Secretary of the Navy. Capt. J. M. GILLISS, U. S. N., Superintendent. Washington, Government Printing Office, 1865. 4°.

Washington, 1864, Vol. XI :

Astronomical and Meteorological Observations made at the United States Naval Observatory during the year 1864. Published by authority of the Hon. Secretary of the Navy. Capt. J. M. GILLISS, U. S. N., Superintendent. Washington, Government Printing Office, 1866. 4°.

Washington, 1865, Vol. XII :

Astronomical and Meteorological Observations made at the United States Naval Observatory during the year 1865. Published by authority of the Hon. Secretary of the Navy. Rear-Admiral CHARLES HENRY DAVIS, U. S. N., Superintendent. Washington, Government Printing Office, 1867. 4°.

Washington, 1866, Vol. XIII :

Astronomical and Meteorological Observations made at the United States Naval Observatory during the year 1866. Published by authority of the Hon. Secretary of the Navy. Rear-Admiral CHARLES H. DAVIS, U. S. N., Superintendent. Washington, Government Printing Office, 1868. 4°.

*November Meteors of 1866, as observed at the U. S. Naval Observatory, Washington. (Prepared by F. BLAKE.) 8°.

Washington, 1867, Vol. XIV :

Astronomical and Meteorological Observations made at the United States Naval Observatory during the year 1867. Published by authority of the Hon. Secretary of the Navy. Commodore B. F. SANDS, U. S. N., Superintendent. Washington, Government Printing Office, 1870. 4°.

*Observations and discussions on the November Meteors of 1867. U. S. Naval Observatory, Washington. Washington, Government Printing Office, 1867. 8°.

Washington, 1868, Vol. XV :

Astronomical and Meteorological Observations made at the United States Naval Observatory during the year 1868. Published by authority of the Hon. Secretary of the Navy. Commodore B. F. SANDS, U. S. N., Superintendent. Washington, Government Printing Office, 1871. 4°.

*Discussion of the West India Cyclone of October 29 and 30, 1867. (By J. R. EASTMAN.) Washington, Government Printing Office, 1868. 8°.

*November Meteors of 1868. U. S. Naval Observatory, Washington. (This is a report by Prof. J. R. EASTMAN.) 8°.

Washington, 1869, Vol. XVI:

Astronomical and Meteorological Observations made at the United States Naval Observatory during the year 1869. Published by authority of the Hon. Secretary of the Navy. Commodore B. F. SANDS, U. S. N., Superintendent. Washington, Government Printing Office, 1872. 4°.

Washington, 1870, Vol. XVII:

Astronomical and Meteorological Observations, made during the year 1870, at the United States Naval Observatory. Rear-Admiral B. F. SANDS, U. S. N., Superintendent. Published by authority of the Hon. Secretary of the Navy. Washington, Government Printing Office, 1873. 4°.

Washington, 1871, Vol. XVIII:

Astronomical and Meteorological Observations made during the year 1871, at the United States Naval Observatory. Rear-Admiral B. F. SANDS, U. S. N., Superintendent. Published by authority of the Hon. Secretary of the Navy. Washington, Government Printing Office, 1873. 4°.

Washington, 1872, Vol. XIX:

Astronomical and Meteorological Observations made during the year 1872, at the United States Naval Observatory. Rear-Admiral B. F. SANDS, U. S. N., Superintendent.

Washington, 1872, Vol. XIX—Continued.

Published by authority of the Hon. Secretary of the Navy. Washington, Government Printing Office, 1874. 4°.

Washington, 1873, Vol. XX:

Astronomical and Meteorological Observations made during the year 1873, at the United States Naval Observatory. Rear-Admiral B. F. SANDS, U. S. N., Superintendent. Published by authority of the Hon. Secretary of the Navy. Washington, Government Printing Office, 1875. 4°.

Washington, 1874, Vol. XXI:

Astronomical and Meteorological Observations made during the year 1874, at the United States Naval Observatory. Rear-Admiral C. H. DAVIS, U. S. N., Superintendent. Published by authority of the Hon. Secretary of the Navy. Washington, Government Printing Office, 1877. 4°.

Washington, 1875, Vol. XXII:

Astronomical and Meteorological Observations made during the year 1875, at the United States Naval Observatory. Rear-Admiral C. H. DAVIS, Superintendent. Published by authority of the Hon. Secretary of the Navy. Washington, Government Printing Office, 1878.

*Instructions for observing the Transit of Mercury, 1878, May 5-6. (Author, Prof. S. NEWCOMB.) (This report will be printed in Appendix II, 1876.) Washington, 1878. 4°.

Instructions for observing the total solar eclipse of July 29, 1878. (With a map.) (Author, Prof. W. HARKNESS.) Washington, 1878. 4°.

III.

SUBJECT-INDEX TO THE WASHINGTON OBSERVATIONS, 1845-1875.

[This index is arranged alphabetically by subjects. The *year* of the volume, not its number, and the page are given. It is to be noticed that several pagings are to be found in some of the volumes. I have included in one and the same alphabet the names of observers, authors and subjects.]

Abbe (C.): Observer, Prime Vertical Transit (1867); Transit Circle (1868).

Aberration-constant: $20''.55$ from R. A. of *Polaris*. (NEWCOMB) (1867), p. 31, App. III.

Almy (J. J.): Observer, Transit Instrument (1845-46).

Ariel: See Uranus.

—: is probably of variable brightness in different parts of the orbit (NEWCOMB) (1873), p. 43, App. I.

Asteroids: Observations. [For a particular asteroid, see under its number.]

Ceres = 1.						
Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1847	Mural . . . . .	.	Dec.	1 observation	1847	294
1849	Equatorial	R. A.	Dec.	September 18-21	1849-50	237
1850	Transit	R. A.	.	1 observation	1849-50	424
1849	Mural . . . . .	.	Dec.	1 observation	1849-50	427
1849	Meridian Circle	R. A.	Dec.	1 observation	1849-50	432
1849	Equatorial	R. A.	Dec.	3 observations	1849-50	441
1864	Transit and Mural	R. A.	Dec.	October 25—November 10	1864	374
1864	Equatorial	R. A.	Dec.	October 18-20	1864	381
1866	Transit Circle	R. A.	N. P. D.	January 31—February 26	1866	401
1868	Transit Circle	R. A.	N. P. D.	August 3-29	1868	340
1853	Mural . . . . .	.	Dec.	May 9-11.	1871 (App. II)	133
1857	Mural . . . . .	.	Dec.	February 3—March 17	1871 (App. II)	143
1858	Mural . . . . .	.	Dec.	June 1-26	1871 (App. II)	144
1874	Transit Circle	R. A.	N. P. D.	December 11-23	1874	393
1875	Transit Circle	R. A.	N. P. D.	January 14	1875	491
Pallas = 2.						
1848	Mural . . . . .	.	Dec.	1 observation	1848	282
1848	Meridian Circle	R. A.	Dec.	1 observation	1848	288
1850	Mural Circle . . . . .	.	Dec.	1 observation	1849-50	428
1864	Equatorial	R. A.	Dec.	September 1-17	1864	380
1865	Transit and Mural	R. A.	Dec.	November 27—December 28	1865	426
1853	Mural . . . . .	.	Dec.	May 9-11.	1871 (App. II)	138
1857	Mural . . . . .	.	Dec.	February 9-28	1871 (App. II)	143
1858	Mural . . . . .	.	Dec.	June 10-15	1871 (App. II)	144
1872	Transit Circle	R. A.	N. P. D.	June 11	1872	299
1874	Transit Circle	R. A.	N. P. D.	November 3—December 22	1874	393
1875	Transit Circle	R. A.	N. P. D.	January 11-14	1875	491

Juno = 3.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1847	Mural . . . . .	.	Dec.	1 observation	1847	294
1851	Mural . . . . .	.	Dec.	3 observations	1851-52	597
1852	Mural . . . . .	.	Dec.	2 observations	1851-52	602
1851	Meridian Circle . . . . .	.	Dec.	1 observation	1851-52	604
1861	Transit Instrument and Mural .	R. A.	Dec.	December 9, 2 observations .	1861	340
1864	Transit and Mural	R. A.	Dec.	July 2-6	1864	374
1864	Equatorial	R. A.	Dec.	June 14-20	1864	380
1865	Transit and Mural	R. A.	Dec.	August 7—October 20. . .	1865	425
1856	Mural . . . . .	.	Dec.	August 25—September 13 .	1871 (App. II)	141
1858	Mural . . . . .	.	Dec.	March 29-31	1871 (App. II)	144
1868	Transit Circle	R. A.	N. P. D.	May 11-30	1868	340
1872	Transit Circle	R. A.	N. P. D.	April 23	1872	299
1873	Transit Circle	R. A.	N. P. D.	June 20	1873	262
1874	Equatorial	R. A.	Dec.	November 7-21	1874	295
1874	Transit Circle	R. A.	N. P. D.	November 16—December 21 .	1874	393
1875	Transit Circle	R. A.	N. P. D.	January 11-15	1875	491

Vesta = 4.

1846	Transit Instrument	R. A.	.	8 observations	1846	406
1846	Mural . . . . .	.	Dec.	5 observations	1846	412
1846	Meridian Circle	R. A.	Dec.	4 observations	1846	419
1848	Transit	R. A.	.	4 observations	1848	274
1848	Mural . . . . .	.	Dec.	4 observations	1848	282
1848	Meridian Circle	R. A.	Dec.	1 observation	1848	288
1849	Equatorial	R. A.	Dec.	December 31	1849-50	244
1850	Transit	R. A.	.	2 observations	1849-50	424
1850	Meridian Circle	R. A.	Dec.	2 observations	1849-50	434
1849	Equatorial	R. A.	Dec.	1 observation	1849-50	441
1851	Equatorial	R. A.	Dec.	June 18—August 15 . . .	1851-52	212
1851	Transit Instrument	R. A.	.	4 observations	1851-52	590
1851	Mural . . . . .	.	Dec.	8 observations	1851-52	597
1851	Meridian Circle	R. A.	Dec.	1 observation	1851-52	604
1852	Meridian Circle	R. A.	Dec.	1 observation	1851-52	609
1851	Equatorial	R. A.	Dec.	June 18—August 15 . . .	1851-52	618
1863	Transit and Mural	R. A.	Dec.	December 29	1863	362
1864	Transit and Mural	R. A.	Dec.	January 5—February 5 . .	1864	374
1865	Transit and Mural	R. A.	Dec.	March 4—May 3	1865	425
1865	Equatorial	R. A.	Dec.	March 10.	1865	431
1866	Transit Circle	R. A.	N. P. D.	August 15—September 15. .	1866	401
1869	Transit Circle	R. A.	N. P. D.	May 25—June 5.	1869	320
1870	Transit and Mural	R. A.	Dec.	October 18—November 7 .	1870	254
1855	Mural . . . . .	.	Dec.	September 1-29	1871 (App. II)	139
1856	Mural . . . . .	.	Dec.	December 29	1871 (App. II)	141
1857	Mural . . . . .	.	Dec.	January 9—February 11 . .	1871 (App. II)	142
1873	Transit Circle	R. A.	N. P. D.	July 11—August 9	1873	262
1874	Transit Circle	R. A.	N. P. D.	November 21—December 22 .	1874	393
1875	Transit Circle	R. A.	N. P. D.	January 11-14	1875	491

Astræa = 5.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1847	Equatorial	R. A.	Dec.	February 1—June 14 . . .	1847	305
1849	Equatorial	R. A.	Dec.	October 15—December 31 .	1849-50	238
1850	Equatorial	R. A.	Dec.	January 14—March 11 . . .	1849-50	267
1849	Equatorial	R. A.	Dec.	October 15—December 31 .	1849-50	440
1850	Equatorial	R. A.	Dec.	January 14—March 11 . . .	1849-50	443
1851	Equatorial	R. A.	Dec.	April 21—June 21	1851-52	185
1851	Equatorial	R. A.	Dec.	April 21—June 24	1851-52	616
1865	Transit	R. A.	.	September 23-27	1865	426
1865	Equatorial	R. A.	Dec.	September 11-16	1865	433
1868	Transit Circle	R. A.	N. P. D.	June 27—July 1	1868	340
1872	Transit Circle	R. A.	N. P. D.	June 11	1872	299
1874	Transit Circle	R. A.	N. P. D.	November 21—December 22 .	1874	394
1875	Transit Circle	R. A.	N. P. D.	January 11	1875	491

Hebe = 6.

1847	Transit	R. A.	.	1 observation	1847	288
1847	Meridian Circle	R. A.	Dec.	1 observation	1847	301
1847	Equatorial	R. A.	Dec.	August 10—September 23 .	1847	306
1850	Equatorial	R. A.	Dec.	February 16—June 5 . . .	1849-50	277
1850	Transit	R. A.	.	1 observation	1849-50	425
1850	Equatorial	R. A.	Dec.	February 16—June 5 . . .	1849-50	445
1851	Equatorial	R. A.	Dec.	July 20—August 28 . . .	1851-52	216
1851	Equatorial	R. A.	Dec.	July 20—August 28 . . .	1851-52	619
1862	Equatorial	R. A.	Dec.	June 9-13	1862	429
1862	Equatorial	R. A.	Dec.	June 9-13	1862	584
1864	Transit and Mural.	R. A.	Dec.	January 9-28.	1864	374
1865	Transit and Mural.	R. A.	Dec.	March 22—April 13 . . .	1865	426
1865	Equatorial	R. A.	Dec.	March 23—April 1	1865	431
1866	Transit Circle	R. A.	N. P. D.	June 11—July 12	1866	401
1869	Transit Circle	R. A.	N. P. D.	April 16	1869	320
1870	Transit Circle	R. A.	N. P. D.	July 23—August 3	1870	249
1855	Mural . . . . .	.	Dec.	September 7-12	1871 (App. II)	139

Iris = 7.

1847	Transit Instrument	R. A.	.	5 observations	1847	288
1847	Mural . . . . .	.	Dec.	5 observations	1847	294
1847	Meridian Circle	R. A.	Dec.	3 observations	1847	301
1847	Equatorial	R. A.	Dec.	October 3—December 19 . .	1847	307
1850	Equatorial	R. A.	Dec.	March 31—August 28 . . .	1849-50	292
1850	Transit	R. A.	.	3 observations	1849-50	425
1850	Equatorial	R. A.	Dec.	March 31—August 28 . . .	1849-50	446
1851	Equatorial	R. A.	Dec.	August 12—December 20 . .	1851-52	220
1851	Transit Instrument	R. A.	.	6 observations	1851-52	591
1851	Mural . . . . .	.	Dec.	24 observations	1851-52	597
1851	Meridian Circle	R. A.	Dec.	13 observations	1851-52	604

Iris = 7—Continued.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1851	Equatorial	R. A.	Dec.	August 12—December 20 . .	1851-52	620
1864	Transit and Mural	R. A.	Dec.	March 2—April 21	1864	375
1865	Transit and Mural	R. A.	Dec.	June 2-28	1865	426
1866	Transit Circle	R. A.	N. P. D.	November 26—December 8 .	1866	401
1853	Mural . . . . .	.	Dec.	April 22-27	1871 (App. II)	138

Flora = 8.

1847	Transit	R. A.	.	8 observations	1847	288
1847	Mural . . . . .	.	Dec.	6 observations	1847	294
1847	Meridian Circle	R. A.	Dec.	6 observations	1847	301
1847	Equatorial	R. A.	Dec.	December 3-6	1847	307
1848	Transit	R. A.	.	6 observations	1848	274
1848	Mural . . . . .	.	Dec.	2 observations	1848	282
1848	Meridian Circle	R. A.	Dec.	9 observations	1848	288
1850	Equatorial	R. A.	Dec.	August 28—December 21 . .	1849-50	345
1850	Transit	R. A.	.	5 observations	1849-50	425
1850	Mural . . . . .	.	Dec.	6 observations	1849-50	429
1850	Meridian Circle	R. A.	Dec.	4 observations	1849-50	435
1850	Equatorial	R. .	Dec.	August 28—December 21 . .	1849-50	451
1851	Equatorial	R. A.	Dec.	January 1-16 (3 obs.) . . .	1851-52	144
1851	Equatorial	R. A.	Dec.	January 1-16.	1851-52	612
1852	Equatorial	R. A.	Dec.	March 31—April 10	1851-52	630
1852	Equatorial	R. A.	Dec.	March 31—April 10	1851-52	470
1863	Transit and Mural	R. A.	Dec.	September 26—October 19 .	1863	362
1865	Transit and Mural	R. A.	Dec.	March 11—April 13	1865	426
1865	Equatorial	R. A.	Dec.	March 18.	1865	431
1866	Transit Circle	R. A.	N. P. D.	July 5-26	1866	401
1869	Transit Circle	R. A.	N. P. D.	May 25	1869	320
1853	Mural . . . . .	.	Dec.	August 10-11	1871 (App. II)	138
1858	Mural . . . . .	.	Dec.	February 25—March 12 . .	1871 (App. II)	144
1872	Transit Circle	R. A.	N. P. D.	May 4.	1872	299
1873	Equatorial . . . . .	.	Dec.*	October 13—November 5 . .	1873	172
1873	Transit Circle	R. A.	N. P. D.	November 5-18	1873	262
1875	Transit Circle	R. A.	N. P. D.	April 5-7.	1875	491

* See A. N. No. 1943.

Metis = 9.

1849	Equatorial	R. A.	Dec.	September 9—December 31 .	1849-50	222
1850	Equatorial	R. A.	Dec.	January 1-15	1849-50	266
1849	Transit	R. A.	.	7 observations	1849-50	424
1849	Mural . . . . .	.	Dec.	4 observations	1849-50	427
1849	Meridian Circle	R. A.	Dec.	7 observations	1849-50	432
1849	Equatorial	R. A.	Dec.	September 9—December 31 .	1849-50	438
1850	Equatorial	R. A.	Dec.	2 observations	1849-50	443

Metis = 9—Continued.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1851	Equatorial	R. A.	Dec.	January 13—June 4	1851-52	176
1851	Equatorial	R. A.	Dec.	January 13—June 4	1851-52	615
1851	Transit Instrument	R. A.	.	4 observations	1851-52	590
1863	Equatorial	R. A.	Dec.	June 15—July 1	1863	243
1863	Equatorial	R. A.	Dec.	June 13—July 1	1863	366
1864	Equatorial	R. A.	Dec.	September 12-17	1864	380
1866	Transit Circle	R. A.	N. P. D.	March 5-30	1866	402
1867	Transit Circle	R. A.	N. P. D.	July 10-11	1867	417
1853	Mural . . . . .	.	Dec.	October 6-8	1871 (App. II)	139
1873	Equatorial (9.6-inch)	R. A.	Dec.	January 31—February 5	1873	161
1874	Transit Circle	R. A.	N. P. D.	June 1	1874	394
1875	Transit Circle	R. A.	N. P. D.	September 3—October 9	1875	491

Hygeia = 10.

1850	Equatorial	R. A.	Dec.	May 20—November 24. . . .	1849-50	304
1850	Transit	R. A.	.	4 observations	1849-50	425
1850	Equatorial	R. A.	Dec.	May 20—November 24. . . .	1849-50	447
1851	Equatorial	R. A.	Dec.	August 29—December 26	1851-52	237
1852	Equatorial	R. A.	Dec.	January 7	1851-52	438
1851	Mural . . . . .	.	Dec.	6 observations	1851-52	597
1851	Meridian Circle	R. A.	Dec.	2 observations	1851-52	604
1851	Equatorial	R. A.	Dec.	August 29—December 26	1851-52	622
1852	Equatorial	R. A.	Dec.	January 7	1862	626
1866	Transit Circle	R. A.	N. P. D.	April 9—May 4	1866	402
1874	Transit Circle	R. A.	N. P. D.	November 7-27	1874	394
1875	Transit Circle	R. A.	N. P. D.	December 20	1875	491

Parthenope = 11.

1850	Equatorial	R. A.	Dec.	July 11—October 9	1849-50	333
1850	Equatorial	R. A.	Dec.	July 11—October 9	1849-50	450
1851	Equatorial	R. A.	Dec.	August 13—December 26	1851-52	229
1852	Equatorial	R. A.	Dec.	January 24—February 14	1851-52	439
1851	Equatorial	R. A.	Dec.	August 13—December 26	1851-52	621
1852	Equatorial	R. A.	Dec.	January 24—February 14	1851-52	626
1866	Transit Circle	R. A.	N. P. D.	August 10-30	1866	402
1873	Equatorial (9.6-inch)	R. A.	Dec.	May 17-24 (2)	1873	165
1874	Transit Circle	R. A.	N. P. D.	October 15-23	1874	394

Victoria = 12.

1850	Equatorial	R. A.	Dec.	October 28—December 27. . . .	1849-50	359
1850	Transit	R. A.	Dec.	1 observation	1849-50	425
1850	Mural	R. A.	Dec.	1 observation	1849-50	429
1850	Equatorial	R. A.	Dec.	October 28—December 27. . . .	1849-50	453
1851	Equatorial	R. A.	Dec.	January 1—March 25	1851-52	145

Victoria = 12—Continued.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1852	Equatorial	R. A.	Dec.	January 25—April 27 . . .	1851-52	452
1851	Equatorial	R. A.	Dec.	January 1—November 28 . .	1851-52	612
1852	Equatorial	R. A.	Dec.	January 25—April 27 . . .	1851-52	628
1864	Transit and Mural.	R. A.	Dec.	June 27—August 3	1864	375
1864	Equatorial	R. A.	Dec.	July 5-14	1864	380
1853	Mural . . . . .	.	Dec.	April 21—May 11	1871 (App. II)	138
1875	Transit Circle	R. A.	N. P. D.	September 24—October 20 .	1875	492

Egeria = 13.

1850	Equatorial	R. A.	Dec.	December 24-27.	1849-50	372
1850	Equatorial	R. A.	Dec.	4 observations	1849-50	454
1851	Equatorial	R. A.	Dec.	January 1—April 29 . . .	1851-52	155
1851	Equatorial	R. A.	Dec.	November 26-28	1851-52	261
1852	Equatorial	R. A.	Dec.	February 14—August 1 . .	1851-52	442
1851	Equatorial	R. A.	Dec.	January 1—December 1 . .	1851-52	613
1852	Equatorial	R. A.	Dec.	February 17—August 7 . .	1851-52	627
1861	Equatorial	R. A.	Dec.	June 14-18	1861	258
1861	Equatorial	R. A.	Dec.	June 14-18	1861	342
1862	Equatorial	R. A.	Dec.	September 19-23	1862	498
1862	Equatorial	R. A.	Dec.	September 19-23	1862	585
1864	Equatorial	R. A.	Dec.	January 5-11.	1864	379
1865	Equatorial	R. A.	Dec.	May 3-17.	1865	432
1866	Transit Circle	R. A.	N. P. D.	August 17—September 15. .	1866	402
1869	Transit Circle	R. A.	N. P. D.	May 15	1869	320
1870	Transit Circle	R. A.	N. P. D.	August 3.	1870	249
1853	Mural . . . . .	.	Dec.	June 4—August 6	1871 (App. II)	139
1871	Transit Circle	R. A.	N. P. D.	December 8-15	1871	170
1875	Transit Circle	R. A.	N. P. D.	October 28—December 2 . .	1875	492

Irene = 14.

1851	Equatorial	R. A.	Dec.	June 9—October 31 . . .	1851-52	190
1852	Equatorial	R. A.	Dec.	September 1—October 16 . .	1851-52	525
1851	Transit Instrument	R. A.	.	2 observations	1851-52	590
1851	Mural . . . . .	.	Dec.	8 observations	1851-52	597
1852	Mural . . . . .	.	Dec.	1 observation	1851-52	602
1851	Meridian Circle	R. A.	Dec.	3 observations	1851-52	604
1851	Equatorial	R. A.	Dec.	June 9—October 31 . . .	1851-52	616
1852	Equatorial	R. A.	Dec.	September 1—October 16. .	1851-52	634
1861	Equatorial	R. A.	Dec.	October 24—November 4 . .	1861	286
1861	Equatorial	R. A.	Dec.	October 24—November 4 . .	1861	343
1863	Equatorial	R. A.	Dec.	February 24—March 5. . .	1863	231
1863	Equatorial	R. A.	Dec.	February 24—March 5. . .	1863	366
1865	Equatorial	R. A.	Dec.	October 6-11	1865	434
1868	Transit Circle	R. A.	N. P. D.	July 18-22	1868	348
1855	Mural . . . . .	.	Dec.	April 27	1871 (App. II)	139

Eunomia = 15.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1851	Equatorial	R. A.	Dec.	September 1—December 26 .	1851-52	243
1852	Equatorial	R. A.	Dec.	January 1—January 14. . .	1851-52	441
1852	Mural . . . . .	.	Dec.	1 observation	1851-52	602
1851	Equatorial	R. A.	Dec.	September 1—December 26 .	1851-52	623
1852	Equatorial	R. A.	Dec.	January 1-14	1851-52	626
1864	Transit and Mural	R. A.	Dec.	July 2-30	1864	375
1864	Equatorial	R. A.	Dec.	July 4-25	1864	380
1865	Transit and Mural	R. A.	Dec.	December 14-28.	1865	427
1866	Transit Circle	R. A.	N. P. D.	January 8-13.	1866	402
1868	Transit Circle	R. A.	N. P. D.	June 15-27	1868	340

Psyche = 16.

1852	Equatorial	R. A.	Dec.	May 7—June 15	1851-52	471
1852	Equatorial	R. A.	Dec.	May 6—June 15.	1851-52	630
1864	Transit and Mural	R. A.	Dec.	July 25-30	1864	375
1864	Equatorial	R. A.	Dec.	July 15-29	1864	380
1865	Transit and Mural	R. A.	Dec.	November 15—December 15 .	1865	427
1865	Equatorial	R. A.	Dec.	November 25	1865	434
1868	Transit Circle	R. A.	N. P. D.	April 30—May 11	1868	340
1855	Mural . . . . .	.	Dec.	December 6	1871 (App. II)	139

Thetis = 17.

1852	Equatorial	R. A.	Dec.	May 19—August 15	1851-52	447
1852	Equatorial	R. A.	Dec.	May 19—August 15	1851-52	631
1864	Transit and Mural	R. A.	Dec.	May 4—June 1	1864	376
1864	Equatorial	R. A.	Dec.	May 30-31	1864	380

Melpomene = 18.

1852	Equatorial	R. A.	Dec.	July 27—December 29	1851-52	490
1852	Mural . . . . .	.	Dec.	4 observations	1851-52	602
1852	Equatorial	R. A.	Dec.	July 27—December 29	1851-52	632
1861	Equatorial	R. A.	Dec.	February 12-20	1861	245
1861	Equatorial	R. A.	Dec.	February 12-20	1861	342
1863	Equatorial	R. A.	Dec.	November 10-12	1863	367
1864	Transit	R. A.	.	January 25-29	1864	376
1866	Transit Circle	R. A.	N. P. D.	June 20—July 14	1866	402
1868	Transit Circle	R. A.	N. P. D.	February 11-18	1868	340
1869	Transit Circle	R. A.	N. P. D.	May 4-15	1869	320
1856	Mural . . . . .	.	Dec.	October 28—November 11 .	1871 (App. II)	141
1873	Transit Circle	R. A.	N. P. D.	July 11-30	1873	262

Fortuna = 19.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1852	Equatorial	R. A.	Dec.	September 13—December 18 .	1851-52	537
1852	Equatorial	R. A.	Dec.	September 13—December 18 .	1851-52	635
1864	Transit and Mural	R. A.	Dec.	December 22-29	1864	376
1864	Equatorial	R. A.	Dec.	December 6-14	1864	381
1866	Transit Circle	R. A.	N. P. D.	March 26—April 19	1866	403
1866	Equatorial	R. A.	Dec.	March 22	1866	411

Massalia = 20.

1852	Equatorial	R. A.	Dec.	October 19—December 18 .	1851-52	550
1852	Equatorial	R. A.	Dec.	October 19—December 18 .	1851-52	636
1862	Equatorial	R. A.	Dec.	May 24-29	1862	425
1862	Equatorial	R. A.	Dec.	May 24-29	1862	583
1865	Transit and Mural	R. A.	Dec.	January 30—March 7	1865	427
1866	Transit Circle	R. A.	N. P. D.	June 8—June 30	1866	403
1869	Transit Circle	R. A.	N. P. D.	April 13	1869	320
1870	Transit Circle	R. A.	N. P. D.	July 23	1870	249

Lutetia = 21.

1866	Transit Circle	R. A.	N. P. D.	March 26—April 19	1866	403
1867	Transit Circle	R. A.	N. P. D.	October 18-23	1867	417
1869	Transit Circle	R. A.	N. P. D.	January 20—February 13	1869	320
1873	Equatorial (9.6-inch)	R. A.	Dec.	February 22-24	1873	163
1874	Transit Circle	R. A.	N. P. D.	June 1-17	1874	394
1875	Transit Circle	R. A.	N. P. D.	November 12—December 20	1875	492

Calliope = 22.

1852	Equatorial	R. A.	Dec.	December 17-18	1851-52	555
1852	Equatorial	R. A.	Dec.	December 17-18	1851-52	637
1866	Transit Circle	R. A.	N. P. D.	August 15-20	1866	403
1869	Transit Circle	R. A.	N. P. D.	March 23—April 13	1869	320
1871	Transit Circle	R. A.	N. P. D.	September 21	1871	170

Thalia = 23.

1866	Transit Circle	R. A.	N. P. D.	January 9-13	1866	403
1866	Equatorial	R. A.	Dec.	January 4	1866	411
1867	Transit Circle	R. A.	N. P. D.	May 27—June 13	1867	417
1868	Transit Circle	R. A.	N. P. D.	August 20-26	1868	340

Themis = 24.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1861	Equatorial	R. A.	Dec.	August 31—September 13. .	1861	280
1861	Equatorial	R. A.	Dec.	August 31—September 13. .	1861	343
1865	Equatorial	R. A.	Dec.	May 30	1865	432
1866	Transit Circle	R. A.	N. P. D.	July 23—August 20 . . .	1866	403
1867	Transit Circle	R. A.	N. P. D.	September 30—October 1 . .	1867	417
1870	Transit Circle	R. A.	N. P. D.	March 21—24	1870	249

Phocæa = 25.

1864	Equatorial	R. A.	Dec.	April 7-25	1864	379
1865	Equatorial	R. A.	Dec.	November 11-27	1865	434
1867	Transit Circle	R. A.	N. P. D.	January 24—February 11 . .	1867	417
1875	Transit Circle	R. A.	N. P. D.	April 5-7	1875	492

Proserpina = 26.

1861	Equatorial	R. A.	Dec.	February 21-28	1861	248
1861	Equatorial	R. A.	Dec.	February 21-28	1861	342
1862	Equatorial	R. A.	Dec.	June 16-26	1862	432
1862	Equatorial	R. A.	Dec.	June 16-26	1862	584
1866	Transit Circle	R. A.	N. P. D.	May 3-14	1866	403
1866	Equatorial	R. A.	Dec.	May 3	1866	411
1874	Transit Circle	R. A.	N. P. D.	February 10-17	1874	394

Euterpe = 27.

1862	Equatorial	R. A.	Dec.	April 23—May 9	1862	424
1862	Equatorial	R. A.	Dec.	April 23—May 9	1862	583
1864	Equatorial	R. A.	Dec.	December 14-22	1864	381
1864	Transit and Mural	R. A.	Dec.	December 22	1864	376
1865	Transit and Mural	R. A.	Dec.	January 4—February 2 . . .	1865	427
1865	Equatorial	R. A.	Dec.	January 4-11	1865	431
1866	Transit Circle	R. A.	N. P. D.	May 12—June 11	1866	403
1870	Transit Circle	R. A.	N. P. D.	July 8-23	1870	249
1853	Mural . . . . .	.	Dec.	December 13-27	1871 (App. II)	138
1858	Mural . . . . .	.	Dec.	March 17	1871 (App. II)	144

Bellona = 28.

1864	Equatorial	R. A.	Dec.	June 3-22	1864	380
1866	Transit Circle	R. A.	N. P. D.	November 6-9	1866	404

Amphitrite = 29.						
Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1864	Transit and Mural	R. A.	Dec.	October 25—November 5 . .	1864	376
1864	Equatorial	R. A.	Dec.	October 18—20	1864	381
1866	Transit Circle	R. A.	N. P. D.	February 20—March 26 . .	1866	404
1867	Transit Circle	R. A.	N. P. D.	June 14—21	1867	417
1874	Transit Circle	R. A.	N. P. D.	February 11	1871	394
1875	Transit Circle	R. A.	N. P. D.	May 31—June 9.	1875	492
Urania = 30.						
1865	Equatorial	R. A.	Dec.	August 15—25	1865	433
1868	Transit Circle	R. A.	N. P. D.	May 26—June 5.	1868	340
Euphrosyne = 31.						
1862	Equatorial	R. A.	Dec.	March 31—April 29	1862	421
1862	Equatorial	R. A.	Dec.	March 31—April 29	1862	583
1865	Equatorial	R. A.	Dec.	September 11—20	1865	433
1868	Transit Circle	R. A.	N. P. D.	April 21—27	1868	341
1871	Transit Circle	R. A.	N. P. D.	September 17	1871	170
1873	Equatorial (9.6-inch)	R. A.	Dec.	February 24—March 7. . . .	1873	164
Pomona = 32.						
1862	Equatorial	R. A.	Dec.	September 26—30	1862	500
1862	Equatorial	R. A.	Dec.	September 26—30	1862	585
1865	Equatorial	R. A.	Dec.	May 16—June 1.	1865	432
1866	Transit Circle	R. A.	N. P. D.	September 8—October 3 . .	1866	404
1867	Transit Circle	R. A.	N. P. D.	December 23—26	1867	417
1869	Transit Circle	R. A.	N. P. D.	May 4	1869	320
1871	Transit Circle	R. A.	N. P. D.	December 8—9	1871	170
1875	Transit Circle	R. A.	N. P. D.	November 2—17	1875	492
Polyhymnia = 33.						
1868	Transit Circle	R. A.	N. P. D.	June 13—27	1868	341
1872	Transit Circle	R. A.	N. P. D.	April 13	1872	299
1873	Equatorial (9.6-inch)	R. A.	Dec.	July 16—24	1873	167
1873	Transit Circle	R. A.	N. P. D.	July 23—August 7	1873	262
1874	Transit Circle	R. A.	N. P. D.	December 15	1874	394
Circe = 34.						
1861	Equatorial	R. A.	Dec.	September 14—25	1861	282
1861	Equatorial	R. A.	Dec.	September 14—25	1861	343
1864	Equatorial	R. A.	Dec.	May 4—16	1864	379
1865	Equatorial	R. A.	Dec.	August 11—16	1865	433
1866	Transit Circle	R. A.	N. P. D.	October 31—November 26 .	1866	404

Leucothea = 35.						
Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1867	Transit Circle	R. A.	N. P. D.	September 5-19	1867	418
Atalanta = 36.						
1864	Equatorial	R. A.	Dec.	September 16-19	1864	381
Fides = 37.						
1863	Equatorial	R. A.	Dec.	August 10-19	1863	246
1863	Equatorial	R. A.	Dec.	August 10-19	1863	366
1864	Transit and Mural	R. A.	Dec.	November 29—December 22	1864	376
1864	Equatorial	R. A.	Dec.	November 25-30	1864	381
1866	Transit Circle	R. A.	N. P. D.	March 29—April 25	1866	404
1867	Transit Circle	R. A.	N. P. D.	June 27—July 11	1867	418
1874	Transit Circle	R. A.	N. P. D.	February 10-18	1874	394
Leda = 38.						
1865	Equatorial	R. A.	Dec.	January 14—February 2	1865	437
Laetitia = 39.						
1862	Equatorial	R. A.	Dec.	June 27—July 5	1862	435
1862	Equatorial	R. A.	Dec.	June 27—July 5	1862	584
1863	Equatorial	R. A.	Dec.	November 10-12	1863	274
1863	Equatorial	R. A.	Dec.	November 10-12	1863	367
1866	Transit Circle	R. A.	N. P. D.	May 2-24	1866	404
Harmonia = 40.						
1864	Equatorial	R. A.	Dec.	September 24—October 18	1864	381
1866	Transit Circle	R. A.	N. P. D.	February 21—March 26	1866	405
1866	Equatorial	R. A.	Dec.	February 21-26	1866	411
1873	Equatorial (9.6-inch)	R. A.	Dec.	April 2	1873	164
Daphne = 41.						
1867	Transit Circle	R. A.	N. P. D.	October 7-23	1867	418
1871	Transit Circle	R. A.	N. P. D.	December 21	1871	170
1874	Transit Circle	R. A.	N. P. D.	January 16-28	1874	395
Isis = 42.						
1864	Equatorial	R. A.	Dec.	September 2-13	1864	380
1867	Equatorial	R. A.	Dec.	April 1-3	1867	331
1867	Transit Circle	R. A.	N. P. D.	March 25—April 6	1867	418

Ariadne = 43.						
Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1864	Equatorial	R. A.	Dec.	August 1-3	1864	380
1867	Equatorial	R. A.	Dec.	May 31	1867	331
1867	Transit Circle	R. A.	N. P. D.	June 1-19	1867	418
1873	Equatorial (9.6-inch)	R. A.	Dec.	March 1-5	1873	164
Nysa = 44.						
1866	Transit Circle	R. A.	N. P. D.	October 3-25	1866	405
Eugenia = 45.						
1866	Transit Circle	R. A.	N. P. D.	May 19-June 21	1866	405
1867	Transit Circle	R. A.	N. P. D.	September 23-October 8 . .	1867	418
1875	Transit Circle	R. A.	N. P. D.	June 4-13	1875	492
Hestia = 46.						
1865	Equatorial	R. A.	Dec.	July 13-August 7	1865	432
1873	Equatorial (9.6-inch)	R. A.	Dec.	July 23-25	1873	167
1873	Transit Circle	R. A.	N. P. D.	July 11-August 9	1873	262
Aglaia = 47.						
1866	Transit Circle	R. A.	N. P. D.	June 18-21	1866	405
1867	Transit Circle	R. A.	N. P. D.	October 18-November 2 . .	1867	418
1869	Transit Circle	R. A.	N. P. D.	January 20	1869	320
Doris = 48.						
1863	Equatorial	R. A.	Dec.	October 8-13	1863	253
1863	Equatorial	R. A.	Dec.	October 8-13	1863	366
1865	Equatorial	R. A.	Dec.	January 20-26	1865	431
1866	Transit Circle	R. A.	N. P. D.	March 26-April 25.	1866	405
1867	Transit Circle	R. A.	N. P. D.	June 6-27	1867	419
1868	Transit Circle	R. A.	N. P. D.	August 26-September 7 . .	1868	341
Pales = 49.						
1863	Equatorial	R. A.	Dec.	December 3-10	1863	276
1863	Equatorial	R. A.	Dec.	December 3-10	1863	367
1865	Equatorial	R. A.	Dec.	March 18.	1865	431
1867	Transit Circle	R. A.	N. P. D.	June 11-29	1867	419
1873	Equatorial (9.6-inch)	R. A.	Dec.	August 2.	1873	169
1874	Transit Circle	R. A.	N. P. D.	December 14-18	1874	395

Virginia = 50.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1861	Equatorial	R. A.	Dec.	July 25—August 24 . . .	1861	275
1861	Equatorial	R. A.	Dec.	July 25—August 24 . . .	1861	343

Nemausa = 51.

1863	. . . . .	.	.	(New elements.) (HALL) . .	1863 (App. B)	lxxxiii
1863	Equatorial	R. A.	Dec.	September 15-29	1863	247
1863	Equatorial	R. A.	Dec.	September 15-29	1863	366
1866	Transit Circle	R. A.	N. P. D.	June 20—July 16	1866	405
1866	Equatorial	R. A.	Dec.	June 20	1866	411
1867	Transit Circle	R. A.	N. P. D.	October 23—November 19 .	1867	419
1869	Transit Circle	R. A.	N. P. D.	March 23—April 13	1869	321
1870	Equatorial	R. A.	Dec.	August 26-30	1870	258

Europa = 52.

1864	Equatorial	R. A.	Dec.	April 26—May 4	1864	379
1867	Transit Circle	R. A.	N. P. D.	November 19—December 23 .	1867	419
1869	Transit Circle	R. A.	N. P. D.	February 20-27	1868	321

Calypso = 53.

1862	Equatorial	R. A.	Dec.	March 7-25	1862	419
1862	Equatorial	R. A.	Dec.	March 7-25	1862	583
1864	Equatorial	R. A.	Dec.	August 1-29	1864	380
1867	Equatorial	R. A.	Dec.	May 31	1867	331
1868	Transit Circle	R. A.	N. P. D.	July 22—August 15	1868	341
1873	Equatorial (9.6-inch)	R. A.	Dec.	October 13	1873	171
1875	Transit Circle	R. A.	N. P. D.	April 5	1875	493

Alexandra = 54.

1866	Transit Circle	R. A.	N. P. D.	March 17-26	1866	406
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Pandora = 55.

1863	Equatorial	R. A.	Dec.	December 4-9	1863	277
1863	Equatorial	R. A.	Dec.	December 4-9	1863	367
1866	Transit Circle	R. A.	N. P. D.	May 7-22	1866	406
1866	Equatorial	R. A.	Dec.	May 5	1866	411
1869	Transit Circle	R. A.	N. P. D.	January 20	1869	321
1870	Transit Circle	R. A.	N. P. D.	March 21	1870	249

Melete = 56.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1861	Equatorial	R. A.	Dec.	September 30—October 8 . .	1861	284
1861	Equatorial	R. A.	Dec.	September 30—October 8 . .	1861	343
1865	Equatorial	R. A.	Dec.	June 28—July 6	1865	432
1866	Transit Circle	R. A.	N. P. D.	November 7—December 12 .	1866	406
1868	Transit Circle	R. A.	N. P. D.	February 14—18	1868	341
1869	Transit Circle	R. A.	N. P. D.	May 3—20	1869	321
1874	Transit Circle	R. A.	N. P. D.	November 4—7	1874	395

Mnemosyne = 57.

1865	Equatorial	R. A.	Dec.	November 11—15	1865	434
1868	Transit Circle	R. A.	N. P. D.	April 21—24	1868	341

Concordia = 58.

1864	Equatorial	R. A.	Dec.	March 9	1864	379
1866	Equatorial	R. A.	Dec.	September 10	1866	412
1866	Transit Circle	R. A.	N. P. D.	September 14—27	1866	406
1869	Transit Circle	R. A.	N. P. D.	April 7—22	1869	321
1870	Transit Circle	R. A.	N. P. D.	August 3	1870	249
1873	Equatorial (9.6-inch)	R. A.	Dec.	February 19	1873	163
1875	Transit Circle	R. A.	N. P. D.	September 8—October 7 . .	1875	493

Elpis = 59.

1862	Equatorial	R. A.	Dec.	February 5—27	1862	410
1862	Equatorial. (Olympia.) (Elpis).	R. A.	Dec.	February 5—27	1862	583
1867	Transit Circle	R. A.	N. P. D.	February 26—March 29 . .	1867	419
1868	Transit Circle	R. A.	N. P. D.	June 15—22	1868	341
1872	Transit Circle	R. A.	N. P. D.	May 4	1872	299
1873	Equatorial (9.6-inch)	R. A.	Dec.	July 25	1873	168
1873	Transit Circle	R. A.	N. P. D.	July 22—August 7	1873	263
1874	Transit Circle	R. A.	N. P. D.	December 14—18	1874	395

Echo = 60.

1861	Equatorial. (Titania). . . .	R. A.	Dec.	January 4—5	1861	244
1861	Equatorial. (Titania). . . .	R. A.	Dec.	January 4—5	1861	342
1862	Equatorial	R. A.	Dec.	February 4—May 22	1862	412
1862	Equatorial. (Titania). . . .	R. A.	Dec.	February 4—May 22	1862	583
1863	Equatorial	R. A.	Dec.	July 22—24	1863	245
1863	Equatorial	R. A.	Dec.	July 22—24	1863	366
1864	Equatorial	R. A.	Dec.	October 7—November 4 . .	1864	381
1866	Transit Circle	R. A.	N. P. D.	April 9—May 4	1866	406
1867	Transit Circle	R. A.	N. P. D.	July 20—August 6	1867	419
1873	Equatorial (9.6-inch)	R. A.	Dec.	February 19—21	1873	163
1875	Transit Circle	R. A.	N. P. D.	September 24—October 12 .	1875	493

Asteroids—Continued.**Danaë = 61.**

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1865	Equatorial	R. A.	Dec.	August 23-26	1865	433
1868	Transit Circle	R. A.	N. P. D.	February 14-18	1868	341
1870	Transit Circle	R. A.	N. P. D.	July 30	1870	249
1870	Equatorial	R. A.	Dec.	July 19-30	1870	257
1871	Transit Circle	R. A.	N. P. D.	December 8	1871	170

Ausonia = 63.

1862	Equatorial	R. A.	Dec.	August 7-26	1862	455
1862	Equatorial	R. A.	Dec.	August 7-26	1862	584
1865	Transit and Mural.	R. A.	Dec.	April 1	1865	427
1865	Equatorial	R. A.	Dec.	April 19-27	1865	432
1866	Transit Circle	R. A.	N. P. D.	September 21—October 17	1866	406
1872	Transit Circle	R. A.	N. P. D.	February 26—March 5	1872	299
1873	Equatorial (9.6-inch)	R. A.	Dec.	July 25-29	1873	168
1873	Transit Circle	R. A.	N. P. D.	August 5-9	1873	263

Angelina = 64.

1863	Equatorial	R. A.	Dec.	September 15—October 8	1863	250
1863	Equatorial	R. A.	Dec.	September 15—October 8	1863	366
1865	Transit and Mural.	R. A.	Dec.	January 18—February 4	1865	427
1865	Equatorial	R. A.	Dec.	February 2-6	1865	431
1866	Transit Circle	R. A.	N. P. D.	May 14—June 11	1866	406
1866	Equatorial	R. A.	Dec.	May 7	1866	411
1867	Transit Circle	R. A.	N. P. D.	August 6—September 5	1867	419
1874	Transit Circle	R. A.	N. P. D.	February 11	1874	395

Cybele = 65.

1864	Equatorial	R. A.	Dec.	November 5-25	1864	381
1867	Transit Circle	R. A.	N. P. D.	February 6—March 7	1867	420
1868	Transit Circle	R. A.	N. P. D.	May 11-26	1868	341
1871	Transit Circle	R. A.	N. P. D.	December 8	1871	170

Asia = 67.

1865	Equatorial	R. A.	Dec.	July 5-14	1865	432
1866	Transit Circle	R. A.	N. P. D.	December 4-12	1866	407
1872	Transit Circle	R. A.	N. P. D.	April 10-13	1872	299
1873	Equatorial (9.6-inch)	R. A.	Dec.	October 11-13	1873	172
1873	Transit Circle	R. A.	N. P. D.	October 8	1873	263

Asteroids—Continued.

Leto = 68.						
Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1861	Equatorial	R. A.	Dec.	June 13-18	1861	257
1861	Equatorial	R. A.	Dec.	June 13-18	1861	342
1866	Transit Circle	R. A.	N. P. D.	May 7-30	1866	407
1866	Equatorial	R. A.	Dec.	May 7	1866	411
1867	Transit Circle	R. A.	N. P. D.	October 17—November 8 . .	1867	420
1869	Transit Circle	R. A.	N. P. D.	January 20—February 13 . .	1869	321
1874	Transit Circle	R. A.	N. P. D.	February 18	1874	395
Hesperia = 69.						
1867	Equatorial	R. A.	Dec.	June 5	1867	331
1868	Transit Circle	R. A.	N. P. D.	July 18—August 19	1868	342
1873	Equatorial (9.6-inch)	R. A.	Dec.	July 16	1873	166
1873	Transit Circle	R. A.	N. P. D.	July 11-30	1873	263
Panopæa = 70.						
1866	Transit Circle	R. A.	N. P. D.	September 14—October 8 . .	1866	407
1867	Transit Circle	R. A.	N. P. D.	December 26	1867	420
1869	Transit Circle	R. A.	N. P. D.	March 15	1869	321
1876	Equatorial	R. A.	Dec.	August 26—September 1 . .	1870	258
Niobe = 71.						
1866	Transit Circle	R. A.	N. P. D.	September 21—October 8 . .	1866	407
1866	Equatorial	R. A.	Dec.	September 19—October 5 . .	1866	412
1869	Transit Circle	R. A.	N. P. D.	February 20-27	1869	321
1870	Equatorial	R. A.	Dec.	August 18	1870	258
1873	Equatorial (9.6-inch)	R. A.	Dec.	January 31	1873	161
1875	Transit Circle	R. A.	N. P. D.	September 3-24	1875	493
Feronia = 72.						
1862	Equatorial	R. A.	Dec.	October 17-27	1862	506
1862	Equatorial	R. A.	Dec.	October 17-27	1862	585
1866	Transit Circle	R. A.	N. P. D.	December 4-8	1866	407
1865	Equatorial	R. A.	Dec.	June 22—July 17	1865	432
1874	Transit Circle	R. A.	N. P. D.	January 16	1874	395
Galatea = 74.						
1862	Equatorial	R. A.	Dec.	October 2-3	1862	502
1862	Equatorial	R. A.	Dec.	September 26-30	1862	585
1866	Transit Circle	R. A.	N. P. D.	June 11-19	1866	407

Asteroids—Continued.**Eurydice = 75.**

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1862	Equatorial	R. A.	Dec.	September 29—November 2 .	1862	504
1862	Equatorial	R. A.	Dec.	September 29—November 2 .	1862	585
1866	Transit Circle	R. A.	N. P. D.	June 25—July 14	1866	407
1875	Transit Circle	R. A.	N. P. D.	September 3—October 9 . . .	1875	493

Freia = 76.

1867	Transit Circle	R. A.	N. P. D.	August 6	1867	420
1875	Transit Circle	R. A.	N. P. D.	December 17-20	1875	493

Diana = 78.

1865	Equatorial	R. A.	Dec.	September 23-27	1865	433
1868	Transit Circle	R. A.	N. P. D.	June 15-22	1868	342
1873	Equatorial (9.6-inch)	R. A.	Dec.	July 30	1873	168
1874	Transit Circle	R. A.	N. P. D.	November 3-28	1874	395

Eurynome = 79.

1863	Equatorial	R. A.	Dec.	September 23—December 24 .	1863	255
1863	Equatorial	R. A.	Dec.	September 23—December 24 .	1863	367
1864	Equatorial	R. A.	Dec.	January 9—April 7	1864	379
1865	Equatorial	R. A.	Dec.	April 1-17	1865	432
1866	Transit Circle	R. A.	N. P. D.	June 4-25	1866	408
1866	Equatorial	R. A.	Dec.	June 13	1866	411
1867	Transit Circle	R. A.	N. P. D.	November 5—December 2 .	1867	420
1869	Transit Circle	R. A.	N. P. D.	April 7-22	1869	321

Sappho = 8

1867	Transit Circle	R. A.	N. P. D.	March 25—April 6	1867	420
1868	Transit Circle	R. A.	N. P. D.	August 26-31	1868	322

Terpsichore = 81.

1864	Equatorial	R. A.	Dec.	December 22-27.	1864	381
1866	Transit Circle	R. A.	N. P. D.	February 16	1866	408
1866	Equatorial	R. A.	Dec.	February 13-15	1866	411
1873	Equatorial (9.6-inch)	R. A.	Dec.	July 16-25	1873	167
1874	Transit Circle	R. A.	N. P. D.	November 16—December 9 .	1874	395

Asteroids—Continued.

Alemene = 82.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1866	Transit Circle	R. A.	N. P. D.	April 19—May 21	1866	408
1867	Transit Circle	R. A.	N. P. D.	July 24—August 6	1867	420
1875	Transit Circle	R. A.	N. P. D.	April 5	1875	493

Beatrix = 83.

1873	Equatorial (9.6-inch)	R. A.	Dec.	June 18	1873	166
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Clio = 84.

1867	Transit Circle	R. A.	N. P. D.	January 15—February 12	1867	421
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Io = 85.

1865	Equatorial	R. A.	Dec.	September 23—December 22	1865	433
1867	Transit Circle	R. A.	N. P. D.	January 11—31	1867	421
1868	Transit Circle	R. A.	N. P. D.	March 30, 31	1868	342
1874	Transit Circle	R. A.	N. P. D.	November 13—December 9	1874	396

Thisbe = 88.

1866	Transit Circle	R. A.	N. P. D.	July 5—October 20	1866	408
1866	Equatorial	R. A.	Dec.	June 21—December 10	1866	412
1867	Transit Circle	R. A.	N. P. D.	November 18—December 7	1867	421
1871	Transit Circle	R. A.	N. P. D.	September 21, 22	1871	170

Julia = 89.

1866	Transit Circle	R. A.	N. P. D.	October 3—20	1866	408
1866	Equatorial	R. A.	Dec.	October 4—December 5	1866	412
1869	Transit Circle	R. A.	N. P. D.	March 18	1869	321
1875	Transit Circle	R. A.	N. P. D.	December 20—22	1875	493

Ægina = 91.

1873	Transit Circle	R. A.	N. P. D.	June 20	1873	263
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Undina = 92.

1867	Equatorial	R. A.	Dec.	July 19—November 26.	1867	331
1867	Transit Circle	R. A.	N. P. D.	July 19—October 26	1867	421
1873	Equatorial (9.6-inch)	R. A.	Dec.	September 20—25	1873	170

Asteroids—Continued.**Minerva = 93.**

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1874	Transit Circle	R. A.	N. P. D.	January 16-24	1874	396

Clotho = 97.

1875	Transit Circle	R. A.	N. P. D.	October 20—November 27	1875	494
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Ianthe = 98.

1875	Transit Circle	R. A.	N. P. D.	October 29—November 30	1875	494
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Miriam = 102.

1874	Transit Circle	R. A.	N. P. D.	January 16-24	1874	396
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Dione = 106.

1873	Transit Circle	R. A.	N. P. D.	August 5	1873	263
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Felicitas = 109.

1870	Equatorial	R. A.	Dec.	January 3—February 19	1870	257
1873	Equatorial (9.6-inch)	R. A.	Dec.	August 22-24	1873	169

Lydia = 110.

1870	Equatorial	R. A.	Dec.	June 25	1870	257
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Ate = 111.

1870	Equatorial	R. A.	Dec.	August 19—October 15	1870	259
1875	Transit Circle	R. A.	N. P. D.	October 20—November 24	1875	494

Iphigenia = 112.

1873	Equatorial (9.6-inch)	R. A.	Dec.	May 23-28	1873	165
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Thyra = 115.

1874	Transit Circle	R. A.	N. P. D.	June 1	1874	396
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Alceste = 124.

1873	Equatorial (9.6-inch)	R. A.	Dec.	December 10-17	1873	172
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Asteroids—Continued.

Nemesis = 128.						
Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1875	Transit Circle	R. A.	N. P. D.	June 4-9	1875	494
Antigone = 129.						
1873	Equatorial (9.6-inch)	R. A.	Dec.	February 8--June 13	1873	162
Electra = 130.						
1873	Equatorial (9.6-inch)	R. A.	Dec.	February 22-28	1873	162
Vala = 131.						
1873	Equatorial (9.6-inch)	R. A.	Dec.	May 28--June 2	1873	166
1874	Transit Circle	R. A.	N. P. D.	November 4-7	1874	296

Austin : (its longitude.) See Geographical Positions.

Bardwell (F. W.) : Observer, Transit Instrument, 1869; Mural Circle, 1869-70.

—: Report on Solar Eclipse of 1867, August 7. 1867, p. 189, App. II.

Beecher (M.) : Observer, Transit Instrument, 1847-48-49-50-51.

Benedict (Wm. B.) : Observer, Mural Circle, 1850-51-52.

Biela's Comet : See Comets.

Blake (F.) : November Meteors of 1866, as observed at the U. S. Naval Observatory, Washington, p. 7 (with a map). 8vo.
[This was a separate publication, and was not included in the annual volumes.]

Bocker's Comet : See Comets.

Borelly's Comet : See Comets.

Brorsen's Comet : See Comets.

Carlin : (its longitude.) See Geographical Positions.

Catalogues of Stars : [These are arranged chronologically.]

Year.	Catalogue.	Volume.	Page.
1838	Catalogue of the R. A. of 90 Stars observed in 1838, reduced to 1838.0, and compared with A. S. C. and N. A.	Gilliss, 1838	17
1839	Catalogue of the R. A. of 340 Stars observed in 1839, reduced to 1839.0, and compared with A. S. C. and N. A.	" 1838	105
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——: Meteorological Observations at the U. S. Naval Observatory from June 30, 1842, to January 1, 1867. 1866, Appendix I.

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——: Report on Solar Eclipse of 1870, December 22. 1869, p. 123, Appendix I.

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——: Zones of Stars observed at the National Observatory, Washington, Volume I, part I (all published in this form) Zones observed with the Meridian Circle in 1846 (observers, Professor HUBBARD, Lieutenant MAYNARD), edited by FERGUSON. These zones were not published in the annual volume. [N. B. For a continuation of these zones, see HALL.]

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—: Longitude of Observatory on Capitol Hill, Washington, 5^h 08^m 04^s.6 W. This depends on observations of 1 solar eclipse; 8 occultations (immersions), 13 occultations (emersions), and 2 of vanishing of meteors. GILLISS, 1838, p. ix.

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TRANSIT CIRCLE.		9.6-INCH EQUATORIAL—Continued.	
Object-glass, { Focal length, 12 ft. 1.0 in. Aperture, 8.52 in.		<i>Power of Eye-pieces</i> (all positive).	
(The sun is observed with an aperture of 3 inches.)		No. 1.	90
<i>Power of Eye-pieces.</i>		No. 2.	132
No. 1.	135	No. 3.	209
No. 2.	158	No. 4.	296
No. 3.	186	No. 5.	433
The diameter of the circles at the outside edge is 45.30 inches, and at the graduation 43.40 inches. Each is divided to every two minutes. Assuming distinct vision with the naked eye to be obtained at a distance of ten inches, the power of the reading microscopes is 45.3 diameters.		No. 6.	562
<i>Collimators to Transit Circle.</i>		No. 7.	734
Object-glasses, { Focal length, 2 ft. 11.2 in. Aperture, 2.13 in.		No. 8.	899
Power of eye-pieces, 67.		<i>Finder to Equatorial.</i>	
TRANSIT INSTRUMENT.		Object-glass, { Focal length, 2 ft. 7.5 in. Aperture, 2.60 in.	
Object-glass, { Focal length, 7 ft. 0.4 in. Aperture, 5.33 in.		Power of eye-piece, 19.8.	
<i>Power of Eye-pieces.</i>		COMET SEEKER.	
No. 1.	85	Object-glass, { Focal length, 2 ft. 8.4 in. Aperture, 3.96 in.	
No. 2.	86	<i>Power of Eye-pieces.</i>	
No. 3.	106	No. 1.	12.6
MURAL CIRCLE.		No. 2.	19.4
Object-glass, { Focal length, 5 ft. 3.8 in. Aperture, 4.10 in.		No. 3.	40.6
<i>Power of Eye-pieces.</i>		No. 4.	40.8
No. 1.	57	No. 5.	40.6
No. 2.	80	No. 5; ring micrometer.	
No. 3.	133	26-INCH EQUATORIAL.	
The circle is 60.35 inches in diameter at its outer edge where the graduation is placed. It is divided to every five minutes. Assuming distinct vision with the naked eye to be obtained at a distance of ten inches, the power of the reading microscopes is 17.1 diameters.		<i>Negative Eye-pieces.</i>	
PRIME VERTICAL TRANSIT.		Designation.	Magnifying power.
Object-glass, { Focal length, 6 ft. 5.0 in. Aperture, 4.86 in.			Field of view.
<i>Power of Eye-pieces.</i>			<i>Diameters.</i>
No. 1.	74	A _I	155*
No. 2.	106	A _{II}	439*
9.6-INCH EQUATORIAL.		A _{III}	863*
Object-glass, { Focal length, 14 ft. 4.5 in. Aperture, 9.62 in.		A _{III}	1360*
		<i>Positive Eye-pieces</i> (Micrometer I).	
		Designation.	Magnifying power.
			Field of view.
			Remarks.
			<i>Diameters.</i>
		I	173
		2	284
		3	392
		3 A	400*
		4	636
		5 A	606
		6 A	888
		7 C	761
		8 F	875
		9	1103
		10	1282
		11	1802
		I	390
		II	585
		III	780
		IV	1560
		Terrestrial	400*

* Approximate.

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- : Clock bought of Dr. LOCKE, of Cincinnati, to whom the price was paid as a reward for his share in the invention of the electro-magnetic method of registration. Bought 1849, November 24; cost \$10,000.
- : Clock, mean time. PARKINSON & FRODSHAM. Bought July 22, 1841; cost £94 10s.
- : Clock, sidereal (gridiron pendulum), C. FRODSHAM. Bought 1846, October 23; cost \$627. (Sent back for repairs 1847; returned October, 1851.)
- : Clock, sidereal. C. FRODSHAM. Bought 1845, January; cost \$315.
- : Clock, sidereal. C. FRODSHAM. Bought 1848, April; cost \$420.
- : Clock, sidereal. PARKINSON & FRODSHAM. Bought 1841, July 22; cost £99 15s.
- : Clock. PARKINSON & FRODSHAM. Bought 1875, September; cost £68 16s. 9d. (Now in Prime Vertical Transit room.)
- : Clock. KESSELS. Used with the Transit Circle.
- : Collimation Error, how determined. See Transit, Introductions. See Transit Circle, Introductions, etc.
- : Comet-Seeker. MERZ & MAHLER. Cost \$280.
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—: Prime Vertical Transit. PISTOR and MARTINS. Cost \$1,750.

—: Refraction Circle ERTEL & SON Bought 1846; cost \$6,000.

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—: Transit Instrument. ERTEL & SON. Bought March, 1847; cost \$1,480.

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Kaiser (F.): Observes opposition of Mars at Leyden in concert with Washington. 1863, p. xlix.

Keith (R.): Observer, Transit Instrument, 1845-46-47-48-49-50-51-52.

Lane (J. H.): Report on Solar Eclipse 1869, August 7. 1867, p. 165, Appendix II.

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List of Publications presented to the Library in 1869				1869	389
List of Publications presented to the Library in 1870				1870	321
List of Publications presented to the Library in 1871				1871	245
List of Publications presented to the Library in 1872				1872	367
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Major (Jas.): Observer, Meridian Circle, 1846-47-48-49-50-51-52.

Marr (B. A.): Observations on the Mississippi River at Memphis, Tenn. March 1, 1850, to March 1, 1851. 1847, Appendix B.

Mars: R. A. of Mars, 1839 (2 observations). GILLISS, 1838, p. 104.—R. A. of Mars, 1841 (3 nights). GILLISS, 1838, p. 479.

—: Observations.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1846	Transit	R. A.	.	2 observations	1846	406
1846	Mural . . . . .	.	Dec.	9 observations	1846	412
1846	Meridian Circle	R. A.	Dec.	6 observations	1846	419
1847	Transit	R. A.	.	7 observations	1847	287
1847	Mural . . . . .	.	Dec.	8 observations	1847	294
1847	Meridian Circle	R. A.	Dec.	12 observations	1847	300
1848	Transit	R. A.	.	11 observations	1848	274
1848	Mural . . . . .	.	Dec.	2 observations	1848	282
1848	Meridian Circle	R. A.	Dec.	1 observation	1848	288
1849	Equatorial	R. A.	Dec.	November 2—December 31	1849-50	246
1850	Equatorial	R. A.	Dec.	January 5-29.	1849-50	272
1850	Transit	R. A.	.	61 observations	1849-50	423
1849	Meridian Circle	R. A.	Dec.	3 observations	1849-50	431

Mars: Observations—Continued.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1850	Meridian Circle	R. A.	Dec.	6 observations	1849-50	434
1849	Equatorial	R. A.	Dec.	. . . . .	1849-50	442
1850	Equatorial	R. A.	Dec.	. . . . .	1849-50	444
1852	Equatorial	R. A.	Dec.	January 7—February 29 . .	1851-52	466
1852	Transit Instrument	R. A.	.	2 observations	1851-52	599
1852	Mural . . . . .	.	Dec.	15 observations	1851-52	601
1852	Meridian Circle	R. A.	Dec.	4 observations	1851-52	608
1852	Equatorial	R. A.*	Dec.*	January 24—February 3 . .	1851-52	629
1862	Equatorial	R. A.	Dec.	August 28—November 4 . .	1862	458
1862	Transit and Mural	R. A.	Dec.	February 19—December 23 .	1862	577
1862	Equatorial . . . . .	.	.	2 drawings (HARKNESS) . .	1862	512
1864	Transit and Mural	R. A.	Dec.	November 15—December 29 .	1864	372
1865	Transit and Mural	R. A.	Dec.	January 4—February 14 . .	1865	422
1866	Transit Circle	R. A.	N. P. D.	November 26—December 20 .	1866	398
1867	Transit Circle	R. A.	N. P. D.	January 8—March 28	1867	414
1869	Transit Circle	R. A.	N. P. D.	January 16—April 16	1869	316
18-8	Mural . . . . .	.	Dec.	May 21—June 21	1871 (App. II)	143
1871	Transit and Mural	R. A.	Dec.	April 3—May 13	1871	174
1873	Transit Circle	R. A.	N. P. D.	March 16—September 27 . .	1873	261
1875	Transit Circle	R. A.	N. P. D.	March 27—November 12 . .	1875	489

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(Some copies of the volume for 1875 contain this paper, but most do not.)

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1847	Mural	+ 2".15	8 observations	1847	xxvi
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Equatorial. 1862, p. 512.

Maury (M. F.): Superintendent from 1844 to 1861.

——: Observer on all the instruments, 1845; Prime Vertical Transit, 1846; 9.6-inch Equatorial, 1846-47.

——: Wind and current charts proposed. 1846, p. 41, Appendix.

Maynard (L.): Observes Zones of Stars with Meridian Circle, 1846. (See FERGUSON.)

——: Observer, Transit Instrument, 1845; Meridian Circle, 1846-47.

Mercury: R. A. of Mercury, 1842, 7 nights. GILLISS, 1838, p. 579.

——: Semi-diameter.

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1847	Mural	+ 0".45	3 observations	1847	xxvi

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Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
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1846	Mural	Dec.	13 observations	1846	411
1846	Meridian Circle	R. A.	Dec.	20 observations	1846	418
1847	Transit Instrument	R. A.	.	2 observations	1847	287
1847	Mural . . . . .	.	Dec.	9 observations	1847	293
1847	Meridian Circle	R. A.	Dec.	9 observations	1847	300
1848	Transit Instrument	R. A.	.	12 observations	1848	274
1848	Mural . . . . .	.	Dec.	7 observations	1848	282
1848	Meridian Circle	R. A.	Dec.	2 observations	1848	287
1849	Transit	R. A.	.	4 observations	1849-50	422
1850	Transit	R. A.	.	6 observations	1849-50	422
1850	Mural . . . . .	.	Dec.	1 observation	1849-50	428
1849	Meridian Circle	R. A.	Dec.	6 observations	1849-50	431
1850	Meridian Circle	R. A.	Dec.	1 observation	1849-50	434
1852	Transit Instrument	R. A.	.	1 observation	1851-52	594
1852	Mural . . . . .	.	Dec.	26 observations	1851-52	600
1852	Meridian Circle	R. A.	Dec.	14 observations	1851-52	608
1861	Transit and Mural.	R. A.	Dec.	19 observations	1861	339
1862	Transit and Mural.	R. A.	Dec.	February 4—December 7 . .	1862	574
1863	Transit and Mural.	R. A.	Dec.	January 3—December 30 . .	1863	359
1864	Transit and Mural.	R. A.	Dec.	January 8—December 28 . .	1864	370
1865	Transit and Mural.	R. A.	Dec.	January 27—December 8 . .	1865	419
1866	Transit Circle	R. A.	N. P. D.	January 30—December 26. .	1866	396
1867	Transit Circle	R. A.	N. P. D.	January 11—December 22. .	1867	412
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1870	Transit Circle	R. A.	N. P. D.	February 18—August 6 . . .	1870	246
1853	Mural		Dec.	January 6—December 27 . . .	1871 (App. II)	137
1871	Transit Circle	R. A.	N. P. D.	August 9—December 27 . . .	1871	169
1872	Transit Circle	R. A.	N. P. D.	January 19—December 4 . . .	1872	295
1873	Transit Circle	R. A.	N. P. D.	January 29—December 30. . .	1873	260
1874	Transit Circle	R. A.	N. P. D.	January 14—December 29. . .	1874	389
1875	Transit Circle	R. A.	N. P. D.	February 8—December 20. . .	1875	487

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Observations.	Volume.	Page.
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Observations with Meridian Circle, 1847, January 5 to December 30	1847	91
Observations with Meridian Circle, 1848, January 2 to December 31	1848	115
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Meteorological Observations:

Meteorological Observations.	Volume.	Page.
Magnetical and Meteorological Observations made at Washington under orders of the Hon. Secretary of the Navy, dated August 13, 1838. Washington, 1845. 8vo.	{ Made by } GILLISS. }	
Meteorological Observations made at the U. S. Naval Observatory during the year 1861 .		439
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Meteors: November Meteors of 1866, as observed at the U. S. Naval Observatory, Washington (with a map). 8vo.

—: Observations and discussions on the November Meteors of 1867. 8vo.

—: November Meteors of 1868, U. S. Naval Observatory, Washington (with a map). 8vo.

[These three volumes were separate publications in octavo form and were not included in the regular annual volumes.]

—: Determination of the mass of Meteors; the formula (p. 20); determination of the light of the moon, planets, and larger fixed stars in terms of the light of a standard candle at the distance of 1 mile (p. 24); the mass of ordinary shooting-stars does not differ greatly from one grain (p. 30). Hints to observers. (HARKNESS.) November Meteors of 1867.

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Meteors: (continued)) November shower of 1867. "The brighter meteors first appeared at an average height of 75 miles, and were extinguished at an average height of 55 miles above the earth." "There is no positive evidence that any one meteor commenced at a greater height than 100 miles." "In the thickest part of the stream there was an average of one meteoroid in 900,000 cubic miles of space." "It is probable that Comet I, 1866, is simply an agglomeration of meteoroids just dense enough to be visible in the solar rays." (NEWCOMB.) November Meteors of 1867, p. 10, 11, 12.

————: Method of determining their heights and distances. (NEWCOMB.) November Meteors of 1867, p. 7.
————: Observations.

Observations of Meteors at Washington.	Volume.	Page.
Observation of Meteors on 13-14 November, 1863. (213 meteors mapped.)	1863 (App. C)	438
Meteors observed in 1870	1870	317
Meteors observed in 1871	1871	239
Meteors observed in 1872	1872	361
Meteors observed in 1873	1873	61
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Meteors: Observed at Syracuse, Italy, December 12, 1870. (EASTMAN.) 1869, p. 132, Appendix I.
Micrometer: Equatorial (9.6-inch).

Year.	Value.	How determined.	Volume.	Page.
1846	15".406	From Polaris and α Lyræ	1846	lxiv
1847	15".361	Polaris, Pleiades.	1847	xxxvi
1848	15".372	North Stars, Pleiades	1848	xl
1849	15".372	{ From stars, and measures of terrestrial marks.	1849-50	xxx
1850	15".370			
1851	15".3696	?	1851-52	xxvii
1861	15".3996	At 47° F. No temperature co-efficient	1861	xxiii
1862	15".3696	In 1849-50	1862	xxxviii
1863	15".3374*	North Stars	1863	xl
1864	Same	* (The objective was refigured in 1862.)		
1865	Same			
1866	Same			
1867	Same			
1868	Same			
1869	Same			
1870	Same			
1871	15".3014 \pm 0".0065	Determined from measures in Præsepe. (HALL) . . .	1871	c
1872	15".31074 \pm 0".00554	North Stars. (SKINNER)	1871	ci

Micrometer: Of the Transit Circle; of the Meridian Circle; of the Mural Circle, etc., etc., etc. (See the Introductions to the various instruments.)

————; The 26-inch Equatorial. Discussion of Micrometer-Screw, etc. 1874, p. lxvi.
————: 9.6-inch Equatorial. See Filar-micrometer; Ring micrometer; (Equatorial.)
————: ROGERS' self-registering micrometer-head. (Description: See *Astron. Nach.*, No. 1493), with a plate. 1865, p. 7. Appendix.
————: General Introduction: Investigation of the Micrometer-Screw. (Mural.) 1863, p. xxii.
————: General Introduction: Table of Correction of Micrometer Readings on account of periodic error of Screw. (Mural.) 1863, p. xxvi.

Micrometer-Screw: Of the 9.6-inch Equatorial. Value = 15".3014 \pm 0".0065. (HALL.) From measures in Præsepe. 1867, p. 11, Appendix IV.

Micrometer-Screws: Of the Transit Circle, investigated. 1865, p. 23.*

Mimas: See Saturn.

Miscellaneous: Description of Observatory on Capitol Hill, Washington. GILLISS, 1838, p. viii.

Miscellaneous: (continued) Description of Naval Observatory in the volume for 1845. Plates at end of volume: Plate I. Plan of Building. Plate II. Portable Telescope and Comet-Seeker. Plate III. West Transit Instrument. Plate IV. Prime Vertical Transit Instrument. Plate V. View of East Room. Plate VI. Mural Circle. Plates VII and VIII. Meridian Circle. Plates IX and X. Refraction Circle. Plate XI. Equatorial; also charts of blank forms, observing-books, etc.

——: Memoir of the Founding and Progress of the U. S. Naval Observatory. By Prof. J. E. NOURSE, U. S. N. 1871, Appendix IV.

——: Introduction: Description of the site of the Observatory. 1846, p. i.

——: Description of Observatory in Santiago de Chile. GILLISS. 1868, p. 6, Appendix I.

——: Explanation of Seal of U. S. Naval Observatory. (Engraving.) [Admiral C. H. DAVIS.] 1865, p. 29.

——: Form for discussing a series of observations by BESSEL'S (FOURIER'S) Theorem. 1866, p. 24, Note A. (EASTMAN.)

——: Star magnitudes observed by GILLISS and others at Santiago. 1868, p. 11, Appendix I.

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Moon: Apparent right ascensions of the Moon's observed *limb* in 1838, 24 culminations, November 21—December 31. GILLISS, 1838, p. 15.

——: Apparent R. A. of Moon's observed *limb*, 1839, 80 culminations; whole year. GILLISS, 1838, p. 103.

——: Apparent R. A. of Moon's observed *limb* in 1840, 104 culminations; whole year. GILLISS, 1838, p. 287.

——: Apparent R. A. of the moon's observed *limb* in 1841, 115 culminations; whole year. GILLISS, 1838, p. 478.

——: Apparent R. A. of Moon's observed *limb*, 1842, January 17—June 21, 44 culminations. GILLISS, 1838, p. 579.

——: How observed with Transit Circle. 1871, p. xxx, and other years.

——: Observations.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page
1846	Transit	R. A.	.	46 observations	1846	405
1846	Mural . . . . .	.	Dec.	32 observations	1846	410
1846	Meridian Circle	R. A.	Dec.	40 observations	1846	417
1847	Transit	R. A.	.	21 observations	1847	287
1847	Mural . . . . .	.	Dec.	15 observations	1847	293
1847	Meridian Circle	R. A.	Dec.	20 observations	1847	299
1848	Transit	R. A.	.	38 observations	1848	274
1848	Mural . . . . .	.	Dec.	35 observations	1848	281
1848	Meridian Circle	R. A.	Dec.	36 observations	1848	287
1849	Transit	R. A.	.	23 observations	1849-50	421
1849	Mural . . . . .	.	Dec.	12 observations	1849-50	426
1849	Meridian Circle	R. A.	Dec.	23 observations	1849-50	431
1850	Transit	R. A.	.	18 observations	1849-50	421
1850	Mural . . . . .	.	Dec.	5 observations	1849-50	428
1850	Meridian Circle	R. A.	Dec.	10 observations	1849-50	434
1851	Transit	R. A.	.	15 observations	1851-52	590
1851	Mural . . . . .	.	Dec.	9 observations	1851-52	596
1851	Meridian Circle	R. A.	Dec.	11 observations	1851-52	604
1852	Transit	R. A.	.	5 observations	1851-52	594
1852	Mural . . . . .	.	Dec.	2 observations	1851-52	600
1852	Meridian Circle	R. A.	Dec.	6 observations	1851-52	608
1861	Transit and Mural	R. A.	Dec.	111 observations	1861	337
1862	Transit and Mural	R. A.	Dec.	January 3—December 29	1862	572
1863	Transit and Mural	R. A.	Dec.	January 1—December 29	1863	356
1864	Transit and Mural	R. A.	Dec.	January 1—December 22	1864	368
1865	Transit and Mural	R. A.*	Dec.*	January 4—December 30	1865	416
1866	Transit Circle	R. A.* N. P. D.*	.	January 3—December 28	1866	394
1867	Transit Circle	R. A.* N. P. D.*	.	January 9—December 13	1867	410
1868	Transit Circle	R. A.* N. P. D.*	.	January 30—December 26	1868	333
1869	Transit Circle	R. A.* N. P. D.*	.	January 19—June 5	1869	316
1869	Transit and Mural	R. A.*	Dec.*	June 16—December 10.	1869	325
1870	Transit Circle	R. A.* N. P. D.*	.	February 9—August 12	1870	245
1870	Transit and Mural	R. A.*	Dec.*	September 3—December 29	1870	253

* Compared with PEIRCE'S and HANSEN'S tables.

Moon: Observations—Continued.

Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1853	Mural . . . . .	.	Dec.	March 10—April 20 . . .	1871 (App. II)	137
1856	Mural . . . . .	.	Dec.	September 10—December 9 .	1871 (App. II)	140
1857	Mural . . . . .	.	Dec.	February 2—December 24. .	1871 (App. II)	141
1858	Mural . . . . .	.	Dec.	February 23—November 19 .	1871 (App. II)	143
1871	Transit Circle	R. A.*	N.P. D.*	August 5—December 27 . .	1871	168
1871	Transit and Mural	R. A.*	Dec.*	January 3—July 12. . . .	1871	173
1872	Transit Circle	R. A.*	N.P. D.*	January 15—December 13. .	1872	293
1872	Mural . . . . .	.	Dec.*	January 22—December 13. .	1872	301
1873	Transit Circle	R. A.*	N.P. D.*	January 30—December 31. .	1873	259
1873	Mural . . . . .	.	Dec.*	July 5—December 30 . . .	1873	264
1874	Transit Circle	R. A.*	N.P. D.*	January 10—December 25. .	1874	387
1874	Mural . . . . .	.	Dec.*	January 24—December 19. .	1874	397
1875	Transit Circle	R. A.*	N.P. D.*	January 11—December 22. .	1875	485

* Compared with PEIRCE's and HANSEN's tables.

- Moon:** Parallaxic inequality is $125''.49 \pm 0''.35$. (NEWCOMB.) 1865, p. 24*.
- : Lunar inequality is $6''.520 \pm 0''.023$. (NEWCOMB.) 1865, p. 27*.
- : Semi-diameter. Effect of the presence or absence of daylight on an observed transit of the Moon's limb, etc. 1865, p. 24*.
- : Moon's Semi-diameter (Mural). $O - C = + 4''.09$. (11 observations.) 1846, p. xxxvi.
- : Observations of transits of Moon's diameter at full Moon with Equatorial. 1846, p. 358.
- : Moon's Semi-diameter (Mural). $O - C = + 4''.63$. (3 observations.) 1847, p. xxvi.
- : Semi-diameter Moon, 1848 (Mural Circle). $O - C = + 2''.26$. (COFFIN.) (5 observations.) 1848, p. xxviii.
- : Sidereal time of Semi-diameter passing the Meridian and Vertical Semi-diameter of the Moon. January 11—December 1, 1865. (9 dates.) 1865, p. 418.
- : Theory. Researches on the Motion of the Moon made at the U. S. Naval Observatory, Washington, by SIMON NEWCOMB, Professor U. S. Navy. Part I. Reduction and Discussion of Observations of the Moon before 1750. 1875, Appendix II.

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——: Reports on the Removal of the U. S. Naval Observatory. 1877 (Reports of the Superintendent, of the Professors and others). Washington, Government Printing Office, 1877. 8vo.

——: Report on the Usefulness of Government Observatories. Washington, Government Printing Office, 1877. 8vo.

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——: Dimensions of ball and ring. Observations of Saturn. Measurement of Diameters of ball and ring. 1849, September 14–October 25. 1849–50, p. 235. Equatorial.

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Year.	Instrument.	R. A.	Dec.	Number of observations.	Volume.	Page.
1846	Transit Instrument	R. A.	.	18 observations	1846	406
1846	Mural . . . . .	.	Dec.	18 observations	1846	412
1846	Meridian Circle	R. A.	Dec.	16 observations	1846	420
1847	Transit Instrument	R. A.	.	15 observations	1847	288
1847	Mural . . . . .	.	Dec.	18 observations	1847	295
1847	Meridian Circle	R. A.	Dec.	13 observations	1847	301
1848	Transit	R. A.	.	14 observations	1848	276
1848	Mural . . . . .	.	Dec.	11 observations	1848	283
1848	Meridian Circle	R. A.	Dec.	9 observations	1848	289
1850	Transit	R. A.	.	3 observations	1849–50	423
1849	Meridian Circle	R. A.	Dec.	4 observations	1849–50	432
1850	Meridian Circle	R. A.	Dec.	2 observations	1849–50	435
1851	Mural . . . . .	.	Dec.	9 observations	1851–52	596
1851	Meridian Circle	R. A.	Dec.	1 observation	1851–52	605
1852	Mural . . . . .	.	Dec.	4 observations	1851–52	601
1852	Meridian Circle	R. A.	Dec.	1 observation	1851–52	609
1861	Transit Instrument	R. A.	.	1 observation (Dec. 23).	1861	340
1862	Transit and Mural	R. A.	Dec.	March 4—May 29	1862	578
1863	Transit and Mural	R. A.	Dec.	January 11—May 19	1863	361
1864	Transit and Mural	R. A.	Dec.	March 12—June 13	1864	373
1865	Transit and Mural	R. A.	Dec.	January 25—June 12	1865	423
1866	Transit Circle	R. A.	N. P. D.	March 22—June 30	1866	398
1867	Transit Circle	R. A.	N. P. D.	March 29—July 11	1867	415
1868	Transit Circle	R. A.	N. P. D.	February 11—July 23	1868	338
1869	Transit Circle	R. A.	N. P. D.	March 4—June 5	1869	319
1869	Transit and Mural	R. A.	Dec.	June 18—July 30	1869	326
1870	Transit Circle	R. A.	N. P. D.	May 16—August 15	1870	248
1871	Transit Circle	R. A.	N. P. D.	August 12–25	1871	169
1872	Transit Circle	R. A.	N. P. D.	May 26– September 21	1872	297
1873	Transit Circle	R. A.	N. P. D.	July 11—November 1	1873	261
1874	Transit Circle	R. A.	N. P. D.	August 27—November 12	1874	391
1875	Transit Circle	R. A.	N. P. D.	August 9—November 12	1875	489

Saturn's Satellites: Observations.

Observations of Saturn's Satellites.	Volume.	Page.
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Enceladus: 1874, August 29—October 17. 26-inch Equatorial	1874	285
Enceladus: 1875, June 16—October 22. 26-inch Equatorial	1875	356
Tethys: 1874, August 29—October 23. 26-inch Equatorial	1874	285
Tethys: 1875, June 20—October 22. 26-inch Equatorial	1875	356
Dione: 1874, August 29—October 23. 26-inch Equatorial	1874	285
Dione: 1875, June 20—December 2. 26-inch Equatorial	1875	357
Rhea: 1874, August 29—October 26. 26-inch Equatorial	1874	286
Rhea: 1875, June 20—December 2. 26-inch Equatorial	1875	357
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+ 0''.66	17	Mural	1847	xxvi
+ 0''.66 } ± 0''.12 }	8	COFFIN	Mural	1848	xxix

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1872	Companion of Sirius. February 23—April 11.	Equatorial	1872	211
1873	Companion of Sirius. March 14	Equatorial	1873	173
1873	Companion of Sirius. November 29	26-inch Equatorial.	1873	177
1874	Companion of Sirius. 12 nights; 3 observers	26-inch Equatorial.	1874	290
1875	Companion of Sirius. 9 nights; 3 observers	26-inch Equatorial.	1875	365

Skinner (A. N.): Observer, Transit Instrument, 1871; 9.6-inch Equatorial, 1871-72-73; Mural Circle, 1873; Transit Circle, 1873-74-75.**Solar Corona:** Its Physical Constitution. (HARKNESS.) 1869, p. 83, Appendix I.**Solar Eclipses:** (1867, August 7), photographs. (CURTIS.) 1867, p. 133, Appendix II, and plates.**Solar Eclipses:** The light during the totality 1867, August 7, was "about equal that on a clear moonless evening when third magnitude stars can be easily seen." (EASTMAN.) 1867, p. 108, Appendix II.

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1870, Dec. 22	Reports on Observations of the Total Solar Eclipse of December 22, 1870. Report of Rear-Admiral SANDS. Appendix I	1869	3
1870, Dec. 22	Report of Professor S. NEWCOMB on Observations of the Eclipse of 1870, December 22, made at Gibraltar. (1 illustration.)	1869	7-25
1870, Dec. 22	Report of Professor ASAPH HALL on Observations of the Eclipse of December 22, 1870, made at Syracuse, Sicily. (1 illustration.)	1869	27-43
1870, Dec. 22	Report of Professor HARKNESS on Observations of the Eclipse of 1870, December 22, made at Syracuse, Sicily. (6 illustrations.)	1869	45-84
1870, Dec. 22	Report of Professor J. R. EASTMAN on Observations of the Eclipse, etc., of 1870, December 22, at Syracuse, Sicily. (2 illustrations; 2 plates.) . .	1869	123-132
1875, Sept. 28	Observations of Solar Eclipse of 1875, September 28. (2 observers.). . .	1875	372

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——: From Meridian Observations of Mars, 8".8340. (Mr. FERGUSON.) 1863, p. xi.
——: Investigation of the Distance of the Sun and of the Elements which depend upon it. (Professor NEWCOMB.) The value deduced by a discussion of all known methods is 8".848 ± 0".013. 1865, Appendix II, p. 29*.

Solar Spots: See Sun-spots.

Spectrum: Of Encke's Comet. See Comets. 1870, Appendix II, p. 32.
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Standard Stars: Positions of the Fundamental Stars deduced from Observations made between the years 1862 and 1867. (SIMON NEWCOMB, Professor U. S. N.) Chapter I. Right Ascension. Chapter II. Polar Distances. 1867, Appendix II.

——: On the R. A. of the Equatorial Fundamental Stars and the Corrections necessary to reduce the R. A. of different Catalogues to a mean homogeneous system, by Prof. SIMON NEWCOMB, U. S. N. 1870, Appendix III.

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Constants for the Reduction of Fixed Stars from 1868 to 1870.0	1868	429
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- : Mean R. A.'s for 1839.0. Separate results. GILLISS, 1838, p. 68.
- : Mean R. A.'s for 1840.0. Separate results. GILLISS, 1838, p. 212.
- : Mean R. A.'s for 1841.0. Separate results. GILLISS, 1838, p. 400.
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Observations with Transit Circle.	Volume.	Page.
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Mean Places of Miscellaneous Stars, given by individual observations with the Transit Circle for 1873.0. (Separate results)	1873	213
Mean Places of Miscellaneous Stars, given by individual observations with the Transit Circle for 1874.0. (Separate results)	1874	345
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Mean Declinations of Stars observed with Mural Circle in 1862 for 1860.0. (Separate results)	1862	555
Mean Declinations of Stars observed with Mural Circle in 1863 for 1860.0. (Separate results)	1863	335
Mean Declinations of Stars observed with Mural Circle in 1864 for 1860.0. (Separate results)	1864	341
Mean Declinations of Stars observed with Mural Circle in 1865 for 1870.0. (Separate results)	1865	393
Mean Declinations of Stars observed with Mural Circle in 1866 for 1870.0. (Separate results)	1866	361
Mean Declinations of Stars observed with Mural Circle in 1867 for 1870.0. (Separate results)	1867	355
Mean Declinations of Stars observed with Mural Circle in 1868 for 1870.0. (Separate results)	1868	401
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Mean R. A. of Stars observed with Transit Instrument in 1861 for 1860.0. (Separate results)	1861	295
Mean R. A. for 1860.0 of Stars observed with Transit Instrument in 1862. (Separate results)	1862	515
Mean R. A. of Stars for 1860.0 observed with Transit Instrument in 1863. (Separate results)	1863	285
Mean R. A. of Stars for 1860.0 observed with Transit Instrument in 1864. (Separate results)	1864	305
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Mean R. A. of Stars observed with Transit Instrument for 1870.0 in 1868. (Separate results)	1868	365
Mean R. A. of Stars observed with Transit Instrument for 1870.0 in 1869. (Separate results)	1869	249
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—: Observes Mural Zones, 1847-49. 1869, p. vi, Appendix II.

Stone (O.): Observer, Transit Circle, 1870-71-72-73-74-75.

Sun: Eclipses. See Solar Eclipses.

—: How observed with Transit Circle. 1871, p. xxix, and other years.

—: Observations.

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1846	Mural "	Dec.	107 observations	1846	408
1846	Meridian Circle	R. A.	Dec.	70 observations	1846	416
1847	West Transit Instrument	R. A.	.	44 observations	1847	286
1847	Mural . . . . .	.	Dec.	58 observations	1847	292
1847	Meridian Circle	R. A.	Dec.	82 observations	1847	298
1848	West Transit Instrument.	R. A.	.	48 observations	1848	272
1848	Mural . . . . .	.	Dec.	54 observations	1848	280
1848	Meridian Circle	R. A.	Dec.	93 observations	1848	286
1849	Transit	R. A.	.	14 observations	1849-50	420
1850	Transit	R. A.	.	14 observations	1849-50	420
1849	Mural . . . . .	.	Dec.	18 observations	1849-50	426
1849	Meridian Circle	R. A.	Dec.	37 observations	1849-50	430
1850	Meridian Circle	R. A.	Dec.	12 observations	1849-50	433
1851	Transit Instrument	R. A.	.	1 observation	1851-52	590
1852	Transit Instrument	R. A.	.	13 observations	1851-52	594
1852	Mural . . . . .	.	Dec.	51 observations	1851-52	600
1852	Meridian Circle	R. A.	Dec.	22 observations	1851-52	608
1861	West Transit Inst. and Mural	R. A.	Dec.	55 observations	1861	336
1862	Transit and Mural	R. A.	Dec.	January 1—December 20	1862	569
1863	Transit and Mural	R. A.	Dec.	January 1—December 30	1863	354
1864	Transit and Mural	R. A.	Dec.	January 2—December 30	1864	365
1865	Transit and Mural	R. A.	Dec.	January 4—December 29	1865	413
1866	Transit Circle	R. A.	N. P. D.	January 4—December 28	1866	391
1867	Transit Circle	R. A.	N. P. D.	January 9—December 26	1867	407
1868	Transit Circle	R. A.	N. P. D.	January 30—December 23.	1868	331
1869	Transit Circle	R. A.	N. P. D.	January 6—June 4	1869	315
1870	Transit Circle	R. A.	N. P. D.	February 3—August 9	1870	243
1871	Transit Circle	R. A.	N. P. D.	August 2—December 27	1871	167
1853	Mural . . . . .	.	Dec.	January 10—March 29	1871 (App. II)	137
1856	Mural . . . . .	.	Dec.	June 20-21	1871 (App. II)	140
1872	Transit Circle	R. A.	N. P. D.	January 2—December 14	1872	291
1873	Transit Circle	R. A.	N. P. D.	January 22—December 31	1873	257
1874	Transit Circle	R. A.	N. P. D.	January 10—December 23.	1874	385
1875	Transit Circle	R. A.	N. P. D.	January 11—December 27.	1875	483

Sun: Semi-diameter.

O — C.	No. of obs.	Instrument.	Observer.	Volume.	Page.
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+2".26 ± 0".088	46	Mural	1847	xxvi
+2".20	25	Mural	COFFIN	1848	xxviii
+2'.67	24	Mural	STEEDMAN	1848	xxviii

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1872	Report of the Superintendent to the Chief of Bureau of Navigation	1872	vii
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1874	Report of the Superintendent to the Chief of Bureau of Navigation	1874	v
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Systematic Errors: In Star-positions of Standard Catalogues. (NEWCOMB.) 1870, p. 22 and p. 43, Appendix III.

———: In observed R. A. General Theory. (NEWCOMB.) 1867, p. 6, Appendix III.

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———: Tables of Instrumental Constants and Corrections for the reduction of Transit observations made at the U. S. Naval Observatory. Prepared by Prof. J. R. EASTMAN, U. S. N. 1872, Appendix I, p. 1.

———: Description of the Transit Circle of the U. S. Naval Observatory. (NEWCOMB.) Part I. Description of the instrument and its adjuncts. Part II. General method of investigating the errors of a Transit Circle. Part III. Determination of the constants of the Transit Circle and its subsidiary apparatus. Part IV. Remarks on the performance and use of the Transit Circle. 8 plates. 1865, p. 1*. See also 1874, p. 21, Appendix I.

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——: Observations.

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1846	Mural	Dec.	7 observations	1846	413
1846	Meridian Circle	R. A.	Dec.	1 observation	1846	420
1847	Transit Instrument	R. A.	.	1 observation	1847	289
1847	Mural . . . . .	.	Dec.	3 observations	1847	295
1848	Transit	R. A.	.	5 observations	1848	276
1848	Mural . . . . .	.	Dec.	5 observations	1848	283
1850	Transit	R. A.	.	2 observations	1849-50	423
1850	Meridian Circle	R. A.	Dec.	1 observation	1849-50	435
1851	Transit Instrument	R. A.	.	1 observation	1851-52	591
1851	Mural . . . . .	.	Dec.	2 observations	1851-52	596
1852	Mural	Dec.	1 observation	1851-52	601
1857	Mural	Dec.	January 9	1871 (App. II)	142
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1862	Transit and Mural.	R. A.	Dec.	January 16—December 6	1862	579
1863	Transit and Mural.	R. A.	Dec.	January 2—December 23	1863	362
1864	Transit and Mural.	R. A.	Dec.	January 2—December 22	1864	373
1865	Transit and Mural.	R. A.	Dec.	January 4—December 30	1865	423
1866	Transit Circle	R. A.	N. P. D.	January 4—December 20	1866	399
1867	Transit Circle	R. A.	N. P. D.	January 8—December 23	1867	415
1868	Transit Circle	R. A.	N. P. D.	February 3—December 23	1868	338
1869	Transit Circle	R. A.	N. P. D.	January 6—March 13	1869	319
1870	Transit Circle	R. A.	N. P. D.	February 16—March 25	1870	248
1870	Transit and Mural	R. A.	Dec.	January 21-25	1870	254
1872	Transit Circle	R. A.	N. P. D.	January 5—April 13	1872	298
1874	Transit Circle	R. A.	N. P. D.	February 10—December 15	1874	391
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1846	Mural	Dec.	39 observations	1846	411
1846	Meridian Circle	R. A.	Dec.	57 observations	1846	418
1847	West Transit Instrument.	R. A.	.	6 observations	1847	287
1847	Mural . . . . .	.	Dec.	15 observations	1847	293
1847	Meridian Circle	R. A.	Dec.	29 observations	1847	300
1848	West Transit Instrument.	R. A.	.	25 observations	1848	274
1848	Mural . . . . .	.	Dec.	16 observations	1848	282
1848	Meridian Circle	R. A.	Dec.	19 observations	1848	287
1850	Equatorial	R. A.	Dec.	October 19—November 30	1849-50	374
1849	Transit	R. A.	.	5 observations	1849-50	422
1850	Transit	R. A.	.	23 observations	1849-50	422
1849	Mural . . . . .	.	Dec.	10 observations	1849-50	427
1850	Mural . . . . .	.	Dec.	21 observations	1849-50	428
1849	Meridian Circle	R. A.	Dec.	10 observations	1849-50	431
1850	Meridian Circle	R. A.	Dec.	17 observations	1849-50	434
1850	Equatorial	R. A.	Dec.	. . . . .	1849-50	454
1851	Equatorial	R. A.	Dec.	January 10-24	1851-52	172
1852	Equatorial	R. A.	Dec.	May 31—September 5	1851-52	486
1850	Transit Instrument	R. A.	.	3 observations	1851-52	590
1852	Transit Instrument	R. A.	.	5 observations	1851-52	594
1851	Mural . . . . .	.	Dec.	11 observations	1851-52	596
1852	Mural	Dec.	44 observations	1851-52	600
1851	Meridian Circle	R. A.	Dec.	1 observation	1851-52	604
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1851	Equatorial	R. A.	Dec.	January 13-24	1851-52	614
1852	Equatorial	R. A.*	Dec.*	May 31—Aug. 29; South pole	1851-52	632
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1861	Transit and Mural	R. A.	Dec.	Sept. 25—Dec. 30 (39 obs.)	1861	339
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1865	Transit and Mural	R. A.	Dec.	January 4—December 28 . .	1865	420
1866	Transit Circle	R. A.	N. P. D.	May 4—December 19 . . .	1866	397
1867	Transit Circle	R. A.	N. P. D.	January 11—December 26. .	1867	413
1868	Transit Circle	R. A.	N. P. D.	January 30—December 22. .	1868	336
1869	Transit Circle	R. A.	N. P. D.	January 6—February 5. . .	1869	317
1870	Transit Circle	R. A.	N. P. D.	February 3—August 11 . .	1870	247
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1871	Transit Circle	R. A.	N. P. D.	August 9—December 27 . .	1871	169
1872	Transit Circle	R. A.	N. P. D.	January 1—December 14 . .	1872	296
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1874	Transit Circle	R. A.	N. P. D.	January 14—December 20 .	1874	390
1875	Transit Circle	R. A.	N. P. D.	January 19—December 27. .	1875	488

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—: Semi-diameter.

Year.	Instrument.	O — C.	No. of obs.	Observer.	Volume.	Page.
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1846	Mural.	+ 0".80†	17	1846	xxxvi
1847	Mural.	+ { 0".75*	7*	1847	xxvi
1847	Mural.	+ { 1".95†	5†	1847	xxvi
1848	Mural.	+ 0".42 ± 0".12	7	COFFIN	1848	xxix
1848	Mural.	+ 1".53 ± 0".18	7	STEEDMAN	1848	xxix

* Near superior conjunction.

† Near inferior conjunction.

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—: Possible observation of, by Mr. VINCENT during Eclipse of August 7, 1869. 1867, p. 176, Appendix II.

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—: Discussion of the Latitude from observations of 1845 and 1846. 1845, [89] Appendix.

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—: Results of observations made at the U. S. Naval Observatory with the Transit Instrument and Mural Circle in the years 1853 to 1860, inclusive. 1871, Appendix II.

—: Catalogue of [10,658] Stars observed at the U. S. Naval Observatory during the years 1845 to 1871. (Epoch 1860.0.) 1871, Appendix III.

—: Description of the Mural Circle (with plate). 1874, p. 13, Appendix I.

—: Description of the Transit Instrument (with a plate). 1874, p. 16, Appendix I.

—: Catalogue of [10,658] Stars observed at the U. S. Naval Observatory during the years 1845 to 1877. Second edition, revised and stereotyped, separately printed and not included in the annual volumes. Washington, 1878. 4°.

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———: (267 Zones of Stars observed with the Mural Circle in the years 1846-47-48-49). (Edited by Professor HALL.) 1869,
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